

THERAPY LANGUAGE AND THEORY OF MULTIPLE INTELLIGENCES: RESEARCH IN RECORDS

Terapia fonoaudiológica de linguagem e teoria das inteligências múltiplas: investigação em prontuários

Renata Gomes Camargo⁽¹⁾, Carolina Lisbôa Mezzomo⁽²⁾

ABSTRACT

Purpose: to investigate the linguistic evolutions of patients with language disorders, with a focus on the area (s) of interest accessed (s) in speech therapy, ranging from the Theory of Multiple Intelligences. **Methods:** this research appears as quantitative and qualitative. The 562 therapeutic developments of 41 records of patients treated at the Department of Language, Speech and Hearing a service linked to a federal university of Brazil were investigated, two types of data analysis were conducted: content analysis through the organization of categories of analysis to data interpretation and, statistical analysis, with application of Chi-square test. **Result:** both the statistical analysis of the data, as the content analysis, it became evident that the more therapeutic strategies beheld (s) area (s) of interest of the patient in therapy, it was his best performance in verbal language/intelligence linguistic focus of language intervention. **Conclusion:** when accessing other area (s) of interest related to multiple intelligences, can promote further development of verbal language/linguistic intelligence of patients with a deficit or alteration in it.

KEYWORDS: Language Therapy; Speech, Language and Hearing Sciences; Intelligence

■ INTRODUCTION

The organization of therapeutic strategies and the effective results for speech therapy care may be investigated based on different aspects and perspectives. Thus, it is thought that the Theory of Multiple Intelligences may be suggested as a type of knowledge which aggregates a lot to speech therapy.

The referred theory explains the cognition complexity by presenting the comprehension that the human intellectual potential takes eight different approaches of identified intelligences. In each subject, interaction and manifestation of skills, regarding each one of them, are singularly expressed^{1,2}. The referred intelligences are the following: Linguistic (verbal language), Logical and

Mathematical, Spatial, Bodily Kinesthetic, Musical, Interpersonal, Intrapersonal and Naturalistic.

Although there is inherent specificity in each of the eight intelligences, they are inter-related and, so, they may interfere in each others' development. This claim is based on the fact that the complexity of activities performed by human beings, mostly, demands the mobilization and use of skills which are inherent to more than one intelligence.

The linguistic intelligence, synonym of verbal language in this case, is impaired in some patients. In these subjects, it was investigated the development therapy from their patient records, being expressed as language delay or disorder³⁻⁵. This intelligence is considered as an intellectual competence which is materialized in comprehension, oral and/or reading and writing production^{1,2,6}.

Through the Multiple Intelligences, areas of interest and individual potentials are more easily visualized. This identification may help language, speech and hearing therapists and other professionals who use the referred theory to support their practice, qualifying their service to people they care.

⁽¹⁾ Universidade Federal de Santa Catarina (UFSC), Florianópolis, SC, Brasil.

⁽²⁾ Universidade Federal de Santa Maria, Santa Maria, Rio Grande do Sul, Brasil.

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Hence, it is believed that by stimulating other intelligences in therapy, apart from linguistic intelligence, better linguistic development may be reached.

The purpose of this research is to investigate linguistic development of patients with language alterations, focusing on interest areas accessed in language, speech and hearing therapy, through the Theory of Multiple Intelligences.

■ METHODS

The research which provided data for this article was approved in April, 2013 by the Ethics Committee from *Universidade Federal de Santa Maria*, protocol n. 14702713.2.0000.5346.

It was analyzed the therapy development from 41 patients records, which were the sample for this research, including all patients from the Language Section, at the Language, Speech and Hearing Service from the same university. Therefore, the study data are all improvements from the patients' records, every time they were received by students of the Supervised Practice in Oral and Written Language.

In relation to the inclusion criteria from the records, the following items were observed: all the records from children and teenagers received at the Language Section, who presented the care record and patient development, with reports of purposes, strategies and results from each session. In the observation of these criteria, six records were excluded because they did not present the development reports, three records were excluded because the patients were adults, in order to have a uniform sample, focusing on children and teenagers who were receiving therapy.

The characteristics of the patients whose records were analyzed are the following: minimal age of four years old (49 months) and maximal age of 17 years old (206 months); 15 male and 17 female. The patients records which were part of the sample presented the following diagnostic hypothesis: Language Disorder, Language Delay, Language disorder as part of global development delay, Language disorder caused by syndromes (to be clarified or clarified), Language disorder associated to development global impairments, Learning difficulties associated or not to other causes, Learning disorders, verbal or buco-linguo-facial dyspraxia associated or not to other causes and oral and written language disorders^{7,8}. It is important to emphasize that the focus of this study is only the appraisal of therapy development in a general way, so the variable pathology was not analyzed in this research.

Two types of data analysis were performed: content analysis and statistical analysis. The first analysis directed towards the investigation of the qualitative data and the second analysis approached the quantitative data. So, this research is quantitative, qualitative and exploratory. About the qualitative component, it was performed a content analysis. In this methodology, categories analysis are selected, after detailed and careful data reading, in order to be interpreted⁹. Moreover, regarding the quantitative component, it was performed statistical analysis, with appropriated test to treat quantifiable elements.

The documents research in records of patients from the Supervised Practice in Oral and Written Language resulted in a survey of 562 developments, considering all the period of therapy.

The content analysis was performed from three categories, selected after reading and rereading the material, focusing on the purpose of the study. Thus, the researchers believe it is important that the choice of those categories is not performed *a priori*, but after deep study of the collected data⁹.

Figure 1 illustrates the break-up of developments in the analyzed categories. Each line represents only one development registration. The selected registration represented the eight multiple intelligences accessed in language therapy.

The category "Strategy" was chosen with the purpose of finding details in the activities developed during therapy, to better understand the two other categories. The study focus of the category "Result" was on the appreciation of verbal language performance and motivation regarding the intelligence area(s) accessed during therapy (one or more multiple intelligence(s)), apart from the linguistic intelligence. The category "Used resources" was investigated through the questioning of resources that exceed materials which consider the linguistic intelligence and its relationship with the second category. Finally, in the category "Accessed Intelligence(s)" it was identified which was/were the approached intelligence(s) in the activities developed during Language, Speech and Hearing therapy.

The content analysis also allowed the researchers to identify each patient's area of interest, visualized through the Theory of Multiple Intelligences. Therefore, after reading, thinking and discussing the development registrations, the referred area(s) was/were characterized, as well as the expression about it/them in every appointment. To perform the statistical analysis, the qualitative data was explored and transformed in quantitative development data of each attendance, through research in the development patients' records.

STRATEGY	RESULT	USED RESOURCES	ACCESSED INTELLIGENCES ¹
A. brought cake ingredients [...] Reading and interpreting the recipe to prepare the cake	A. was very excited, making effort to read [...] danced in the kitchen	Cake ingredients (eggs, flour, sugar, etc.)	Bodily Kinesthetic and naturalistic intelligence ²
It was used tales which were interesting to the patient [...]	Not specified ³	Children's Books	Intrapersonal Intelligence
It was performed the writing of mathematical problems. First, the therapist wrote a problem and handed out the patient to solve it. Then, the patient made a problem and the therapist helped her to solve it.	The patient has good performance in the task, by solving the problem, but her writing still presents grammar and punctuation errors.	Writing and calculation	Logical and mathematical intelligence
Therapy with the game "Parts of the House"	[...] the girl hit all the number concordances and she did not hit gender concordance three times [...] creation of a poster with a boy and the girl was well involved in therapy, paying attention to each objects she should organize	Assembly game	Spatial Intelligence
EVA rubber animals, such as horses [...] associating the onomatopoeias and playing as she was in a little farm with them [...] music imitating the animals	I. named and imitated animals, but did not play as she was in a farm, asking for songs [...] the song was played [...] I. she was released, danced and imitates all the song animals	Animal pictures and song	Musical intelligence
Little Red Riding Hood story telling [...] telling with puppets	G. is creating longer sentences, but with lack of connectors. He/she expressed interest in the story telling by the classmate C.	Book and puppets	Interpersonal Intelligence

¹ It is implied that in all strategies the linguistic intelligence is being worked, so it is not mentioned in the chart, only the other intelligences, according to Gardner (2010).

² This development was put in the figure so the readers can visualize the complexity of the performed content analysis, as in most of the developments there is the registration of the activities which approach more than one multiple intelligence, apart from the linguistic intelligence.

³ This example was inserted in the figure to illustrate that some developments approach only the activity description, not the patient's performance during therapy, making it impossible to make their content analysis.

Figure 1 – Examples of content analysis categories.

After surveying and organizing development tables, the therapy results and the access to the patient's area(s) of interest in each development were codified, stipulating an identification number of each data, in order to perform statistical analysis.

The results registered by the therapists were classified in four categories, with their respective numbers: "totally reached the purpose of verbal language development dealing with certain(s) intelligence(s)", number 1; "partially reached", number 2; "did not reach", number 3; and "not possible to identify", number 4. The last category was used when the therapist did not register the therapy result and/or when aspects related to verbal language were not found in the registration. Also, it was codified the access to the patients' area of interest, based on the eight multiple intelligences: "totally reached the patient's area(s) of interest", number 1; "partially reached", number 2; "did not reach", number 3; "it was not possible to identify", number 4.

In this research, it was used the statistical program BioEstat 5.0, because it was verified as appropriate to treat the data. A statistical professional applied the Chi-squared Test and performed the residual analysis of data. The referred analysis aimed at identifying the existence of correlations with statistical significance among the patients' areas of interest in the perceived therapeutic strategies, in this article, through the Theory of Multiple Intelligences and the identification of categories of the result.

■ RESULTS

In the investigation of the 562 developments, based on the content analysis, it is visualized the trajectory of each patient of the service and, hence, it is identified their area(s) of interest through deep and detailed study of the developments of the 41 researched reports.

The study through the categories "Strategy", "Result", "Used resources" and "Accessed intelligences" led to the result of the Language, Speech and Hearing therapy importance through different resources and strategies which are not restricted only to oral expression and/or writing and/or reading. Repeating the example of reading and performing the recipe, presented in Figure 1, it can be visualized in the registration how the reading activity, which corresponds to one of the verbal language/linguistic intelligence skill, became more attractive and easier, in a certain way, contributing for patients' better performance.

When the patients' area(s) of interest is/are accessed, the verbal skill which is weak is out of

focus, and the others, which are possibly more developed, are emphasized, as the patients try to perform activities which are related to it/them. Thus, they propitiate that, most of the time, the patient is able to perform activities which reach the proposed purposes of the therapy planning and of the session planning, which regard verbal language/linguistic intelligence.

Next, there are examples of registrations which illustrate the previous claims:

"Playing hopscotch [...] playing with modeling clay [...] C. demonstrated coordination [...] C. liked the play and made shapes like animals to give to the therapist";

"[...] doll house, pets and cooking utensils [...] to stimulate language and the patient's need of sleeping in a separated bedroom [...] The patient vocalized a lot during interaction [...] besides, the subject kept producing onomatopoeia, [...] calmer behavior than in the others."

"Computer activity, A. looked for another cake recipe [...] A. wrote the recipe [...] was excited with the possibility of cooking again".

"Interaction with gas station and cars [...] M. was communicative and happy [...] started to repeat verbs and is keeping concentration for longer time".

It is valid to highlight that not every time the therapist accessed the patients' area of interest, verbal language/linguistic intelligence during therapy it was positive. However, the registration of this type of occurrence was rare, about 50 developments, and, also, frequently, this impaired performance was related to external factors. Next, there is an excerpt of result which exemplifies such situation, in which it was worked with the patient's area of interest, observed in 15 development registrations. The following song takes into account the musical intelligence: "*was agitated and overturned chairs, threw toys on the therapist and also spat. The patients got calm only with soap bubbles [...]*".

The patient's behavior demonstrates that possibly extra therapy matters were interfering in his/her performance. In other example, the therapist emphasizes these extra therapy factors, registering only this result: "*It was worked with a Barney video and drawings painting [...] The patient was sleepy, he/she slept late*". So, although both therapists organized therapy through the access to the patient's area of interest, it was not possible to perform an effective work.

The statistical analysis was performed observing the value 1.96 to consider the result as

statistically significant, as it is presented in Table 1. The considered p value was < 0.001 . It was verified in this analysis the association with statistical significance among the items “totally reached”; “partially reached”; “did not reach”; and “not possible to identify” the development of the linguistic intelligence with the items “totally reached”; “partially reached”; and “not possible to identify” the patients’ areas(s) of interest, respectively.

The referred table shows that the performance in verbal language/linguistic intelligence corresponds to the analyzed categories. In other words, when the therapeutic strategy was “totally reached the patients’ area(s) of interest”, the result “totally reached the development of the linguistic

intelligence” was statistically significant. This correspondence was repeated in the other items.

After the statistical analysis of data, it is possible to infer: as much the patient’s interest area(s) is/are reached in the therapy strategies, the Language, Speech and Hearing session has more opportunity to present effectiveness in its purpose of better performing verbal language/linguistic intelligence.

As in data statistical analysis, as in the content analysis, it was evident that as much the therapeutic strategies reached the patient’s areas(s) of interest in therapy, better was his/her verbal language/linguistic intelligence performance, focus of the Language, Speech and Hearing intervention. Therefore, in both analyses, the same results were found, what makes the research more conceivable.

Table 1 – Residual analysis of the Chi-Squared Test. Statistical test result

Results	Totally reached the patient’s area(s) of interest	Partially reached the patient’s area(s) of interest	Did not reach the patient’s area(s) of interest	Not possible to identify the patient’s area of interest
Totally reached the development of the linguistic intelligence	14.9167	-6.6857-	-5.0359	-8.4173
Partially reached the development of the linguistic intelligence	-2.3966	8.4751	-0.8945	-4.0075
Did not reach the development of the linguistic intelligence	-7.5760	1.6267	16.4927	-2.9836
Not possible to identify the development of the linguistic intelligence	-8.3106	0.0562	-4.5563	12.5269
Alfa level 0.05	1.96			
Alfa level 0.01	2.576			

Legend: Chi-Squared Test. (p value) < 0.001 .

■ DISCUSSION

The Language, Speech and Hearing therapy, in its different intervention fields, observes general and specific purposes which guide therapy strategies to be developed. These are related to qualification of oral or written communicative skills.

The evaluations show which linguistic level(s) should be more focused in therapy. So, therapy planning systematization, sessions planning and therapy strategies begin.

However, the last item, which regards the therapy proposed activities, related to this research results, should reach other skills, not only verbal language/linguistic intelligence. So, more than organizing the purposes that reach the patients' needs, other factors should be considered in order to present more effectiveness in Language, Speech and Hearing therapy.

Among such aspects, the access to the patients' area(s) of interest is highlighted^{10,11}. It is understood that these areas are more easily understood and visualized through multiple intelligences.

This way to manage therapy may be performed through qualified mediation, providing to the patients activities with different resources and strategies. These may reach other types of intelligence, not only linguistic intelligence, focus of therapy.

It is important to mention that the singularity of each patient's interaction helps therapists in the management of therapy strategies that qualify the therapy results^{1,2,6}. The study and preparation of therapy based on the Theory of Multiple Intelligences provide to therapists the developed activities according to the patients' area(s) of interest and also the opportunity to know a range of activities that reach the same intelligence.

Therefore, the referred study provides to Language, Speech and Hearing therapists more possibilities of therapy strategies alternatives. At the same time, the Language, Speech and Hearing professional may reach as the patients' interest as their possible potentials, regarding their difficulty area, reason for therapy, that is verbal language/linguistic intelligence deficit.

For example, the naturalistic intelligence regards as topics related to approximation with nature, through work with or about animals or plants, as topics about sensitivity, such as taste, searching recognition and application of elements to obtain success in the developed activity. The naturalistic intelligence also provides to therapists other ideas of work which, through investigation and study, may get the intended foundation^{1,12}.

In a research developed by the Language, Speech and Hearing area, with children with cochlear

implant, it was assured the need of investigating and evaluating the multiple intelligence areas and strong and weak points in children's development, in different places they go, such as school and therapy clinic¹³.

The investigation in other knowledge fields, not health or Language, Speech and Hearing area, has applied the Theory of Multiple Intelligence to qualify practice. The field of general education and foreign language teaching should be highlighted.

Hence, it is perceived that the approach of different multiple intelligences in activities with preschool children is an excellent way to promote cognitive development^{14,15}. Likewise, several authors observe that foreign language learning with methodologies related exclusively to linguistic intelligence does not guarantee its effectiveness and signification¹⁶⁻¹⁸.

Other studies approach the importance of recognizing the different cognitive styles to each person to, possibly, qualify the process of teaching/learning^{12,19-22}. Moreover, another study mentions the use of multiple intelligence recognition as enabler of global development²³.

In many development registration it was implicit that the therapist tried to reach, through the strategies, areas of interest and different multiple intelligences of patients. However, in no registration it was found systematic nature and clarity of this contemplation. This data verifies the relevance of new researches that approach the possibilities of acting in Language, Speech and Hearing therapy based on the Theory of Multiple Intelligence.

As the Theory of Multiple Intelligences do not detail the individual development of each of the eight intelligences, it can be thought about deeper investigation in the approximation between the referred theory and language theories that present different epistemological basis, improving as scientific knowledge as its possible applications. A possible discussion that should be better investigated is the approximation to the Language Connectionist Theories.

This understanding happens because the connexionism, as an empiricist line of thought, presents other possibilities to delineate language therapy and Theory of Multiple Intelligence. The connexionism may provide the understanding among access to different cognitive processes and language acquisition²⁴⁻²⁶.

In this sense, a research hypothesis may be the access to other intelligences, in order promote verbal language/linguistic intelligence. Thus, with deeper investigation, there is opportunity to verify the correlation among the different intelligences,

focusing on Language, Speech and Hearing therapy systematization and its results.

In the contextualization of these correlations, it is observed that different resources and strategies that exceed the limited access to learning may be explained in theory, when the linguistic intelligence is approached. The author suggests that when a linguistic area of intelligence is weak, for example, the writing in alphabetic codes, when mainly the auditory pathways are accessed for learning, it may be emphasized by other areas, such as spatial and Bodily Kinesthetic. These two areas are more emphasized in learning a written language with ideographic characters⁶. Therefore, it is started a study through pathways that are not children's deficit, potentializing the development of their verbal language/linguistic intelligence.

■ CONCLUSION

The access to other area(s) of interest, related to multiple intelligences, may provide more development of verbal language/linguistic intelligence of patients who present deficit or alteration in these aspects. In this therapeutic movement, the focus on the specific area which they present difficulty is taken away and the therapeutic strategy starts to be stimulated by other area(s)/intelligence(s), which potentialize the treatment of the area with deficit.

In other words, the way and the emphasis of the language, speech and hearing therapy are altered and/or improved, aiming at qualifying the verbal language performance.

It is important to highlight that the studied field was the supervised practice in language, speech and hearing therapy, thus, the therapists were in process of professional training. It is believed that the increasing acting experience tends to provide to therapists qualification of the sensitivity to visualize the area(s) of interest. It is more common in patients who did not develop speech, requiring more professional attention.

Finally, it is important to mention a challenge that is approaching these areas with verbal language/linguistic intelligence intervention. Sometimes some intelligence and, perhaps, the specific resources that mobilize the patients' interest may be more difficult than others to be associated with the referred intelligence.

Therefore, thinking about several activities and possibilities of resources and activities into an intelligence, to work with verbal language/linguistic intelligence, depending on the patients' area of interest, for example the Bodily Kinesthetic, may use from a simple strategy with modeling clay to the creation of circuits with several motor areas. Thus, different therapeutic strategies lead to different requirements and difficulties to language, speech and hearing therapists.

RESUMO

Objetivo: investigar as evoluções linguísticas de pacientes com alteração de linguagem, com foco sobre a(s) área(s) de interesse acessada(s) na terapia fonoaudiológica, compreendidas a partir da Teoria das Inteligências Múltiplas. **Métodos:** esta pesquisa configura-se como quanti-qualitativa. Foram investigadas 562 evoluções terapêuticas de 41 prontuários de pacientes atendidos no Setor de Linguagem, de um Serviço Fonoaudiológico vinculado a uma universidade federal do Brasil, tendo sido realizados dois tipos de análise dos dados: análise de conteúdo, por meio da organização de categorias de análise para interpretação dos dados e, análise estatística, com aplicação do Teste Qui-quadrado. **Resultado:** tanto na análise estatística dos dados, quanto na análise de conteúdo, ficou evidente que, quanto mais as estratégias terapêuticas contemplassem a(s) área(s) de interesse do paciente em terapia, melhor era o seu desempenho na linguagem verbal/inteligência linguística, foco da intervenção fonoaudiológica. **Conclusão:** ao se acessar outras área(s) de interesse, relacionadas as inteligências múltiplas, pode-se promover um maior desenvolvimento da linguagem verbal/ inteligência linguística dos pacientes que apresentam um déficit ou alteração na mesma.

DESCRITORES: Terapia da Linguagem; Fonoaudiologia; Inteligência

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Mailing address:

Renata Gomes Camargo

Rua José João Martendal, nº385, apto. 212,

Bairro Carvoeira

Florianópolis – SC – Brasil

CEP: 88040-420

E-mail: re_kmargo@hotmail.com