



The behavioral theory in speech language and hearing sciences practice: a literature review

A teoria comportamental na prática fonoaudiológica: uma revisão de literatura

La teoría comportamental en la práctica fonoaudiológica: una revisión de la literatura

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Abstract

The aim of this study was to verify in the Brazilian literature scientific productions that contribute to behavioral theory for speech language and hearing pathology performance. The literature review was performed using the databases “Biblioteca Virtual em Saúde” (BVS) and “Scientific Eletronic Library” (SciELO). The descriptors used to locate the articles in Portuguese were “Fonoaudiologia” and “Comportamento”. The first analysis of the articles was performed through the inspection of the title and the abstract. The detailed analysis of the articles was performed using a “Protocol for article classification”. Twelve articles were identified correlating the speech language and hearing sciences and the behavioral approach. It was observed that there was growth of publications in the year of 2007, however, in 2008 it declined again and stabilized in the next four years. In 2013 this production has grown sharply again. Language was predominant, followed by Educational, Audiology, Voice and Fluency among all speech language and hearing sciences specialties. It was concluded that behavioral theory is present in speech language and hearing pathology performance and new studies are needed to investigate international productions.

Keywords: Speech, Language and Hearing Sciences; Behavior; Communication; Psychological Theory.

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EM, FRS, DMOF and ENN: Preparation of proposal, conducting data collection, organization of collected information and discussion of results.

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Received: 23/09/2017

Accepted: 11/04/2018



Resumo

O objetivo deste estudo foi verificar na literatura brasileira produções científicas com contribuições da teoria comportamental para a atuação fonoaudiológica. Foi realizada revisão de literatura utilizando as bases de dados “Biblioteca Virtual em Saúde” (BVS) e “Scientific Eletronic Library” (SciELO). Os descritores utilizados para a localização dos artigos na língua portuguesa foram “Fonoaudiologia” e “Comportamento”. A análise do artigo foi realizada, inicialmente, por meio da inspeção do título e do resumo. Em seguida, foi realizada a análise detalhada dos trabalhos utilizando-se um “Protocolo de Classificação de Artigos”. Foram identificados 12 trabalhos correlacionando a Fonoaudiologia e a Abordagem Comportamental. Observou-se que houve crescimento das publicações no ano de 2007, porém, em 2008 voltou a cair e a se estabilizar nos próximos quatro anos. Em 2013 esta produção voltou a crescer acentuadamente. Dentre todas as especialidades da Fonoaudiologia, identificou-se a Linguagem como a predominante, seguida da Educacional, Audiologia, Voz e Fluência. Concluiu-se que a teoria comportamental está presente nas práticas fonoaudiológicas, sendo necessários novos estudos que investiguem as produções internacionais.

Palavras-chave: Fonoaudiologia; Comportamento; Comunicação; Teoria Psicológica.

Resumen

El objetivo de este estudio fue verificar en la literatura brasileña producciones científicas con contribuciones de la teoría comportamental para la actuación fonoaudiológica. Se realizó una revisión de literatura utilizando las bases de datos “Biblioteca Virtual em Saúde” (BVS) y “Scientific Eletronic Library” (SciELO). Los descriptores utilizados para la localización de los artículos en la lengua portuguesa fueron “Fonoaudiologia” y “Comportamiento”. Se realizó el análisis del artículo, inicialmente, por medio de la inspección del título y del resumen. A continuación se realizó el análisis detallado de los trabajos utilizando un “Protocolo de Clasificación de Artículos”. Se identificaron doce trabajos correlacionando la Fonoaudiología y el Enfoque Comportamental. Se observó que hubo crecimiento de las publicaciones en el año 2007, pero en 2008 volvió a caer y a estabilizarse en los próximos cuatro años. En 2013 esta producción volvió a crecer acentuadamente. Entre todas las Especialidades de la Fonoaudiología se identificó el Lenguaje como la predominante, seguida de la Educativa, Audiológica, Voz y Fluidez. Se concluyó que la teoría comportamental está presente en las prácticas fonoaudiológicas, siendo necesarios nuevos estudios que investiguen las producciones internacionales.

Palabras clave: Fonoaudiología; Conducta; Comunicación; Teoría Psicológica.

The historical evolution allows us to verify that the human being has gone through considerable changes in terms of communication. The vocal musculature was used to issue screams which demonstrated warning signs. Over time, people began to use the vocal structure in an operational way, in order to actively interfere in social relationships. Therefore, language was born as human behavior strongly influenced by the practices of the verbal community to which the individuals belonged¹⁻².

The behavioral literature advocates that communication is learned in the interaction between listener and speaker³. Verbal behavior is created and maintained by the community according to the results obtained in that relationship. In the be-

havioral approach, the linguistic rules learned are similar to the verbal practices of the community of speech. The environment changes the verbal behavior and it changes the probability that the response occurs again⁴.

For the Analysis of Behavior, language is a verbal behavior modeled and maintained by its consequences⁵. The response is seen as a reaction to stimuli, as something that changes the environment. Verbal behavior is modeled and differentiated through the individual history of the interactions with the environment⁶.

The practices of speech therapy can be benefited by the Applied Behavioral Analysis. The undesired behaviors can be eliminated or reduced

in frequency of manifestation. On the other side, desirable behaviors (such as communicative intention) can be reinforced and modeled according to each environmental situation⁷.

However, studies that may reveal how the Behavioral Theory subsidizes the speech therapy practices are still necessary⁸.

Thus, the aim of this work was to verify in Brazilian literature scientific productions with contributions from the behavioral theory to the Speech, Language and Hearing Sciences.

Method

This work is characterized as exploratory, according to the aims that were defined, as well as bibliographic, considering the technical procedures that were used in the data collection. The period of continuity of the research defined it as longitudinal, and the temporal directionality qualified it as retrospective⁹⁻¹⁰.

A bibliographic review of Speech, Language and Hearing Sciences literature was done, correlat-

ing Speech, Language and Hearing Sciences and the Behavioral Approach. The collection was done in the national databases “Virtual Health Library” (BVS) and “Scientific Electronic Library” (SciELO), between 2005 and 2017. The descriptors used to find the articles in Portuguese were “Speech, Language and Hearing Sciences” and “Behavior”.

We investigated in literature, in national journals of Speech, Language and Hearing Sciences and correlated areas (psychology, public health, among others) complete works and available for free, which could demonstrate a direct relationship of the behavioral theory in prevention, evaluation and/or intervention of the speech and hearing alterations.

The first analysis of the articles was done through the inspection of the title and abstract. Those which were not in accordance with the theme in question were eliminated, and it resulted in a final sample of 12 works.

Next, the detailed analysis of the works was done using a “Protocol of Classification of Articles”, adapted from the study of Vasconcelos, Pessoa and Farias¹¹, Nascimento et al¹². and Nascimento et al.⁸, as it can be seen in Table 1.

Table 1. Protocol of classification of articles

Title of the article:		
Journal:		
Year:		
Area:	Audiology	
	Dysphagia	
	Gerontology	
	Educational Speech, Language and Hearing Sciences	
	Neurofunctional Speech, Language and Hearing Sciences	
	Labor Speech, Language and Hearing Sciences	
	Neuropsychology	
	Language	
	Fluency	
	Orofacial Motricity	
	Voice	
	Collective Health	

The analysis of the identified works was done by three researchers who filled the “Protocol of Classification of Articles” according to the results that were obtained during the collection. From that, the articles were made available in a table (Table 2) for better visualization and, afterwards, the main findings from each article were described, according to the specialty.

Results

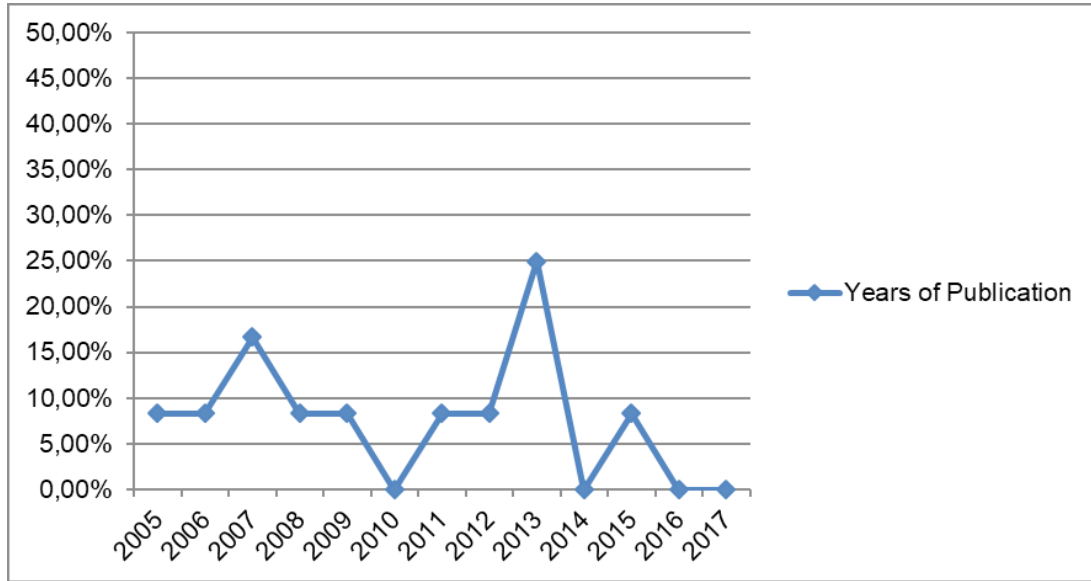
Twelve works were identified, which correlated Speech, Language and Hearing Sciences and the Behavioral Approach, these being complete articles published in journals, which are presented in Table 2, according to the chronological order of publishing:

Table 2. Distribution of the works identified in literature

Year	Author	Title
2005	Rose ⁶	Behavioral analysis of learning of reading and writing
2006	Vera, Conde, Wajnsztejn e Nemr ¹³	Learning disorders and presence of oral breathing in individuals with diagnosis of Attention Deficit Hyperactivity Disorder (ADHD)
2007	Gomes e Kerbauy ¹⁴	Strategies of confrontation used by adult stutterers, not submitted to therapy
2007	Silva, Lopes-Herrera e De Vitto ¹⁵	Language disorder as part of a global disorder of development: description of a speech therapeutic process
2008	Sudo, Soares, Souza e Haydu ¹⁶	Equivalence of stimuli and the use of games to teach reading and writing
2009	Kwee, Sampaio e Atherino ¹⁷	Autism: a transdisciplinary evaluation based on the program TEACCH
2011	Fritsch, Oliveira e Behlau ¹⁸	Opinion of parents about voice, characteristics of behavior and personality of their children
2012	Lamônica, Silva, Furlan, Abramides, Vieira, Morreti-Ferreira et al ¹⁹	Clinical, behavioral, cognitive and communicative characteristics in Smith-Magenis Syndrome
2013	Fernandes e Amato ²⁰	Applied Behavior Analysis and Autism Spectrum Disorders: review of literature
2013	Gonçalves e Castro ²¹	Proposal of speech therapy intervention in infantile autism: systematic review of literature
2013	Santos, Marangoni, Andrade, Vieira e Gil ²²	Behavioral Evaluation of hearing processing in individuals after traumatic brain injury: pilot study
2015	Cibian e Pereira ²³	Use of questionnaires in monitoring results of hearing training

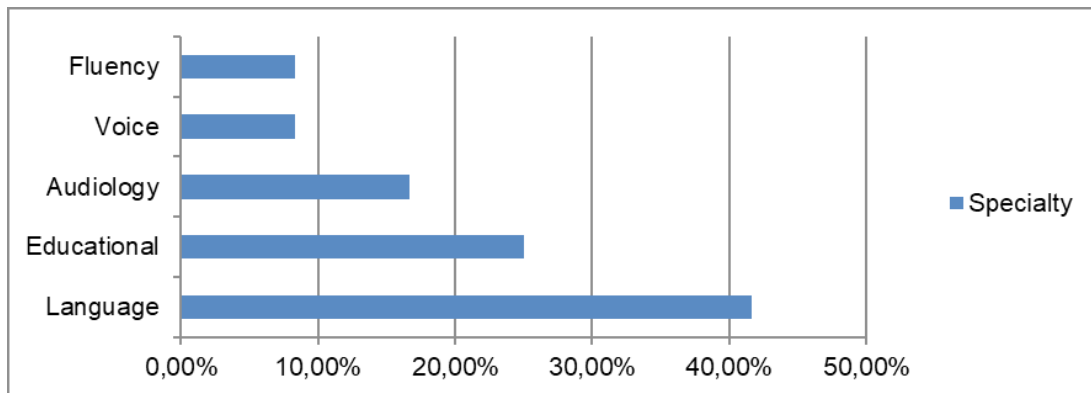
We can observe in Figure 1 that there was a growth in publications in 2007 (16.7%), however they began to decrease again in 2008 (8.33%) and stabilized in the four subsequent years. Besides, there was again an increase in 2013 (24.99%).

Among all the specialties of Speech, Language and Hearing Sciences, we identified Language (41.67%) as the area in which the publications are predominant, followed by the areas Educational (25%), Audiology (16.67%), Voice (8.33%) and Fluency (8.33%).



Source: Picture elaborated by the authors

Figure 1. Distribution of publications per year



Source: Picture elaborated by the authors

Figure 2. Distribution of publications per specialty of speech, language and hearing sciences

Discussion

This study showed that in the years 2007 and 2013, there was a growth in publications related to the behavioral theory in speech therapy practices, as in results found in similar studies conducted by Nascimento et al⁸ and Nascimento et al¹². New studies are necessary to identify historical and academic facts occurred in that date which influenced this production.

Concerning the specialties, this work of review showed that the Behavioral Theory is inserted in the practices of the specialties of Language, Educational, Audiology, Voice and Fluency. It can be noticed that Language was predominant, and it coincides with other studies that identified the Speech, Language and Hearing Sciences specialties in the interface with Psychology¹² and with Psychoanalysis⁸.

Among the five works categorized in the specialty of Language, three are about autism. One of



them is a systematic review of 52 articles which shows the involvement of the therapy based on the Applied Behavior Analysis (ABA) in bearers of Autism Spectrum Disorder (ASD). The behavioral approach contributed to the process of intervention, training of professional and support for parents in language intervention. Besides, it allowed analyzing and interfering in environmental factors and in the behavior of the children studied²⁰.

A second research was conducted with six autists at the ages between seven and twelve years old. The participants were evaluated through the Treatment and Education of Autistic and related Communication Handicapped Children (TEACCH), an instrument based on the Behavioral Theory, which values the description of behaviors, step-by-step programs and behavioral boosters. All the subjects involved had a positive growth in the areas evaluated. The study reached the conclusion that, in terms of competences, the evaluative protocols TEACCH helped the transdisciplinary team to monitor the individual program of the students and to promote discussions with different professionals¹⁷.

The third study with autism was conducted with a 24-month-old male child and aimed at describing the process of speech therapy intervention using the principles of behavioral analysis. For the evaluation of the language and the aspects of cognitive development, the Protocol of Behavior Observation (PROC) and the evaluation of language in situations of spontaneous interaction and of ludic activities were used. The child responded satisfactorily to the principles of the Applied Behavior Analysis, together with a functional approach of communication, acquiring behaviors like eye contact, joint and communicative attention, as well as oral language with communicative interactional function¹⁵.

Still as it concerns the specialty of Language, a bibliographic research that used the electronic databases Medline, Lilacs and SciELO (2006-2010) was identified. This collection demonstrated that the Applied Behavioral Analysis (ABA) allows stimulating language, through positive reinforcements, in three to four-year-old children. For the Behavioral Approach, the child can be positively rewarded through clapping and praises, and the repetition makes the child perform the activity in an independent way²¹.

The fifth study about Language was conducted with two male individuals between 9 and 19 years

old, with the genetic diagnosis of the Smith-Magenis Syndrome. The speech language and hearing evaluation was conducted through the observation of communicative behavior and description of the clinic, behavioral and cognitive aspects. Thus, it allowed seeing the changes in oral language, in the psycholinguistic skills and the processing of visual and hearing information with striking reflections in the development of communicative skills¹⁹.

Concerning the Educational specialty, three studies were identified. One of them showed that children who made writing errors can learn to write correctly through games. The research had an analytic-behavioral perspective and used the model of equivalence of stimuli (training of two conditional discriminations with one element in common) as a strategy of teaching of reading and writing. Three children at the ages of 6 and 8 years old participated. The process of intervention comprised three games: the board, memory, and copy on the chalkboard. A dictation of 8 words of training and 10 of generalization was conducted. The results showed an increase in the number of training words and syllables correctly written, being repeated in the generalization, and it allowed concluding that the programmed conditional relations and the games contributed to the improvement of the participants' writing¹⁶.

Still in the Educational specialty, a study highlights that the learning of reading and writing has an important neurologic component, but it is also a learned behavior. It evidences the need of analyzing the teaching methods used by the teachers and thinking about innovative behavioral strategies⁶.

Concerning Educational Speech, Language and Hearing Sciences, in learning disorder, handbooks of 77 users of the Outpatient Service of Neurodifficulty of the Medicine College of ABC (FMABC), in the state of São Paulo, between 2005 and 2006, were analyzed. There was statistical significance to the presence of learning disorder, school difficulty and no grade retention. It was proven in this study the association between learning disorder, low school performance and the presence of oronasal breathing in children and adolescents. The relation between the findings in this study and the Behavioral Theory consists of the fact that the high incidence of the presence of complaints of school difficulty occurs for the presence of several cumulative and multi-causal factors of risk, like, for instance, the behavioral changes,

and it results in low school performance, grade retention, expulsion, suspension, low self-esteem and serious problems of social functioning¹³.

In the specialty of Audiology, a study was identified with participation of 10 individuals (8 male and 2 female) at ages between 13 and 42 years old, with history of head trauma. They were submitted to tonal threshold audiometry, logoaudiometry, acoustic immittance test (tympanometry and acoustic reflexes study) and behavioral evaluation of the hearing process. The hearing behavioral evaluation contributed to the evaluation of the individuals after traumatic brain injury and, associated to the evaluation of the hearing process. It was possible to identify the hearing change in 100% of the individuals²².

Another study, in the specialty of Audiology, aimed at monitoring the hearing behavior through accounts of complaints of individuals diagnosed with auditory processing disorder, who underwent hearing training, using the questionnaire "Fisher's auditory problems checklist for auditory processing evaluation" (QFISHER), in different moments: before, during and after the intervention. The authors noticed the decrease in the complaints in the middle and at the end of the training and, after the hearing training, showed evidences of a decline in these difficulties in daily situations, concluding that the QFISHER questionnaire can be used to monitor the hearing behavior in the three moments studied²³.

Concerning the specialty Fluency, accounts of stutterers who were not submitted to therapy were investigated, and strategies of confrontation employed to overcome the difficulties and face the situations of communication were identified. The participants were three men and one woman, at ages ranging between 31 and 54 years old, stutterers since their childhood. The verbalizations were grouped in categories which provided information about the following themes: the stuttering; reactions of people to stuttering; feelings about stuttering; background which increased or decreased stuttering; behaviors of escape from situations of speech; strategies of confrontation used to speak more fluently in situations that used to be feared and avoided in the past; rules that describe a behavior to be followed and some of the contingencies that can control it. The study demonstrated that it is necessary that the stutterer is exposed to the situations feared, but that it may be done using a

behavioral repertory, analyzing the relationship between speech and its consequences¹⁴.

In the specialty Voice, a study was found, which analyzed how parents notice and describe their children concerning the voice. 66 parents participated, answering a questionnaire with 28 questions, being 4 questions about the characteristics of the voice (sound of the voice, tone and quantity of use of the voice) and 24 about behavioral aspects and of personality (agitation, inquietude, need of loneliness, tension/anxiety). Parents stated, in this study, that their children are more sensitive than other children at their age, besides having a behavior of agitation, inquietude and impulsivity. The authors also evidenced a relationship between the voice behaviors of children and their parents' behavior; thus, the children's behavior may be a reflection of their parents¹⁸.

Conclusion

This work sought to carry out a review of literature in face of the behavioral theory by the speech language and hearing sciences practice. It was observed that, among the speech language and hearing sciences specialties, Language was the area with the largest number of publications found in literature, followed by Educational.

This study also showed an increase in the publications in the years 2007 and 2013, with stagnation in the other years. It demonstrates the need of more studies that can find the possible causes for the decline in the number of these publications.

It is possible to conclude that there are studies that show the relationship between the Behavioral Theory and the speech language and hearing sciences therapy. However, it is emphasized that new searches should be done in order to investigate publications in the international level.

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