

# PHONEMIC DISCRIMINATION IN THE ADULT SECOND LANGUAGE ACQUISITION – CASE STUDY

## *Discriminação fonêmica na aquisição de segunda língua em adulto – estudo de caso*

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### ABSTRACT

This article aims to investigate the discrimination of phonemes for second language of an adult who speaks Spanish as native language who is acquiring Brazilian Portuguese as second language, according to the perceptions of the speaker himself. The article was developed from a case study using a semi-structured interview. A comprehensive reading and skimming of data were performed following the orthographic transcription of the interview, seeking to analyze what was recurrent in the patient's speech. Some determinants were shown and pointed to discursive categories of analysis. Five categories were created and 11 discursive sequences were selected for discussion. Based on the discursive sequences it was possible to attest the importance of the discrimination of phonemes in the learning process of second language, as well as the difficulty of developing second language in late age because it becomes restrict and unnatural. The discrimination of phonemes seems to be facilitated by some characteristics presented by the interlocutor that make the acoustic traces more prominent. Furthermore, the change in this ability can generate complex circumstances in the interaction between the pairs. Once there is an improvement in the discrimination of phonemes, there is also an improvement in both the speech production and comprehension, facilitating the language domain and the social interaction between pairs. Results demonstrated that the a better development of second language seems to be associated to the early exposure to the second language because in the first infancy there is still a great plasticity of auditory skills and the discrimination of phonemes is not restrict indicating that the formal teaching of second language and the perceptual skills should be stimulated at this age range.

**KEYWORDS:** Speech Perception; Auditory Perception; Multilingualism

### ■ INTRODUCTION

Phonemic discrimination is very important for the acquisition of the phonemes of mother language (L1)<sup>1</sup>. At birth, babies are already able to detect contrasts present in consonant sounds. Subsequently, they become skilled at selectively discriminating the phonemes of the exposed language, going through a perceptual reorganization for new sounds, which is essential for the learning of speech<sup>2</sup>. The learning of speech sounds only occurs when there are conditions for the discrimination of sounds between

themselves, which provides acceptable units for verbal expression of the thought<sup>3</sup>.

Study suggests that the use of L1 affects the perception and the production of sounds beyond the initial stages of second language acquisition (L2)<sup>4</sup>. It is not known what is the ideal age to start learning a L2, but there is a consensus on the greater success of the learner regarding the longer exposure and the greater linguistic experience with L2<sup>4,5</sup>. Few L2 learners come to acquire the target language with native domain or with the same competence than in L1<sup>5-7</sup>.

One aspect that distinguishes the acquisition of L2 is that the learner starts this task already knowing a language. It is not known exactly what is the role that the mother language plays in L2, but it is known that there is greater disparity in phonological acquisition of L2 in relation to L1 than in other components of

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the language<sup>7</sup>. Languages have different segmental inventories, and some segments of L2 cannot be part of the inventory of L1. Consequently, it may have transference of pronunciation of L1 to L2<sup>7</sup>.

As the acquisition of the phonology of the L1 and L2 seems to be different, difficulties of L2 speakers may occur because of his subjacent representation of the language, once he does not know the native "target"<sup>7</sup>. So, it is interesting to examine how the enunciation in L2 is for the learner. The term "listening" will be used in this work according to the enunciative perspective, which means realizing what a singular enunciation evokes<sup>8</sup>.

The L2 learner usually needs to learn to produce and also to understand some new sounds in foreign language acquisition<sup>7</sup>. The domain of two languages permits the individual to have an improvement in auditory processing, as the exposure to a second language, from the auditory experience of speech perception, enables the improvement on speed and on efficiency of processing of auditory information<sup>6</sup>.

For that reason, the aim of this paper was to investigate the phonemic discrimination of L2 adult speaker of Spanish as L1 and the acquisition of Brazilian Portuguese as L2, from the perception of the speaker himself through qualitative analysis.

## ■ CASE PRESENTATION

This research was carried out from a case study (CAE 19100713.8.0000.5346), with qualitative cross-sectional approach, by means of a semi-structured interview. The interview took place in a speech language pathology clinic, with differentiated time for the treatment sessions, during forty minutes. The interview filming was taken, with subsequent orthographic transcription of the data. The questions were planned from the observations noticed by the patient and the speech therapist during phonotherapy sessions.

Patient G was 46 years old at the moment of the interview. He is Argentinian and resides in Brazil since 1996. He is a psychologist and a university professor. He looked forward speech therapy because he felt the need to improve his communication: listening and expression, with patients, students and in family and social life. At the moment of interview, G. was in phonotherapy for 13 months.

At first, phonotherapy emphasized the acquisition of segments which were not part of the phonetic inventory of G. or those ones in which there was a high occurrence of phonological processes, through activities which would involve phonemic discrimination for a better perception and discrimination of sound and phonetic exercises for its application. We attempted to put these exercises on topics of interest to the patient, such as Brazilian popular music (BPM), poetry, the news, words and phrases with specific vocabulary of his profession, or also,

hobbies. Until the time of the interview, the fricative phonemes [z], [ʃ] and [ʒ], as the affricate ones [tʃ] and [dʒ], and the open vowels [ɛ] and [ɔ] had been worked.

For qualitative data analysis, we used the method proposed by Minayo and Sanches<sup>9</sup>, especially focusing on the content analysis, used by other authors<sup>10,11</sup>. Then, we performed exhaustive and fluctuating reading of data, trying to analyze what had repeated in the speech of the patient. From this, some determinants of G speech became evident, which pointed out to discursive categories of analysis.

Thus, five discursive categories were created, to be exact: space creation for new phonemes; phonemic discrimination facilitated by characteristics of the interlocutor; difficulties in phonemic discrimination as generator of complex circumstances; improvement in phonemic discrimination generates improvement in listening; social interaction determinate by the language domain. In each of these categories, the most appropriate discursive sequences for the category (DS) were elected, not respecting the order of the interview but didactic content.

The interview used in this paper was carried out with the consent of G. who signed the Consent Term, consenting to the application and dissemination of research.

## ■ RESULTS

Next, the categories and their respective discursive sequences are presented<sup>1</sup>

### Category 1: Space creation for new phonemes

DS1: *De fato as palavras a gente aprende mesmo que mal, mesmo que sem discriminar os sons, né? É... os gestos a gente pode imitar. Uma coisa que é muito mais difícil é criar, espaço, para novos fonemas. E... gente que vive isto como algo natural, como respirar, como beber, a gente começa a falar e vive como um órgão, um órgão que faz parte de... do ser, vivo. E de um dia para outro falar **copo, escola** e falar **café** (palavras trabalhadas com as vogais abertas [ɔ] e [ɛ]) e... há que abrir um espaço. Um novo, um novo registro acústico, um novo traço psíquico para isso que aí, neste momento, a gente consegue ver o nível de identificação necessário para incorporar o traço fonético.* (English version - Certainly the words we learn even though wrong, even though without discriminating sounds, right? Right... the gestures we can imitate. One thing that is much harder is to create, space, for new phonemes. And... people who live this as something natural, like breathing, like drinking, we start to speak and live like an organ, an organ that is part of ... of the being, alive. And overnight say the words **copo, escola** and say **café** (words worked with the open vowels

[ɔ] and [ɛ]) ... and we have to launch a space. A new, a new acoustic register, a new psychological feature for it that is, at this moment, we can see the level of identification required for the incorporation of the phonetic feature.)

DS2: (...) o momento forte eu diria, o momento inicial, [ɛ] (referindo-se a vogal aberta) “é pau, é pedra” (cantando a música *Águas de Março*, de Tom Jobim, utilizada na fonoterapia para discriminação fonêmica da vogal)... a partir daí começa a se situar um novo espaço para um fonema e por um período isto é... tem muita resso... ressonância, tem muita ressonância. A gente carrega este fonema por um período como mais importante que os outros e logo como que isso é assimilado e perde a importância. (English version - (...) a strong point I would say, the initial moment, [ɛ] (referring to the open vowel) “it is stick, it is a stone” (singing the song *Águas de Março*, by Tom Jobim, which was used in phonotherapy for phonemic discrimination of vowel) ... from there it begins to place a new space for a phoneme and for a period that is ... has a lot of reso... resonance, has much resonance. We carry this phoneme for a period as more important than others ones and soon as it is assimilated and loses its importance.)

DS3: Então eu vejo que se dá ciclicamente. Hoje tornou mais importância um fonema que talvez faz quatro meses atrás ou três meses atrás é... talvez era muito importante. Depois perde seu lugar porque vai se incorporando outras coisas e depois de um tempo... retorna...eu acho que ... forma um circuito de grau de que... nunca... nunca retorna com tanta força de como o dia que foi inscrito pela primeira vez. Eu acho que isso fica um tanto como histórico para a gente... fica um tanto como um tempo de, de muita potência para a criação. Logo é... isso vai cedendo, com a prática rotineira, até incomodo as vezes de ter que prestar atenção a uma coisa que já não é natural para a gente, aprender os sons... fonemas... Mas depois é... às vezes retorna facinho, retorna a possibilidade de dominar. (English version - So I see that occurs cyclically. Today it became more importance a phoneme was maybe four months ago or three months ago... maybe it was very important. After it loses his place because it will be incorporating other things and after some time... it returns... I think... it forms a circuit of degree that... never... never returns with as much force as the day that was used for the first time. I think this is somehow like history for us... is somehow like a time, a lot of power to create. Then it is ... this will give away with routine practice, sometimes I even bother having to pay attention to something that is no longer natural to us, learn the sounds... phonemes... But then it is... sometimes it returns very easy, it returns the possibility to domain.)

## Category 2: Phonemic Discrimination facilitated by characteristics of the interlocutor

DS1: (...) no primeiro momento a pessoa a única pessoa que eu achava que eu podia distinguir certos fonemas eras tu, como fonoaudióloga. Depois algumas pessoas tinham é... certa é... fonética, me pareceram alguns fonemas mais acentuados, mais claros. E assim isso foi abrindo, hoje em dia o leque digamos que é maior (English version - (...) the first time the person the only person I thought I could distinguish some phonemes was you, as speech therapist. After, some people had... right... it is phonetics, some phonemes sounded more pronounced, clearer. And so it started to open, today let's say that the range is greater.)

SD2: Eu acho que aquele traço, de identificação de fonemas que dependiam a princípio de identificação de alguma pessoa é... foi então é... se espalhando, né? Pelas outras pessoas que mostravam que tinham aquele traço fonético e aí se dá bem em uma questão de imitação, assim em imitar, assimilando os outros. - I think that that feature, of identification of phonemes that depended on the principle of identification of any person is... then it was ... spreading, right? By other people who presented that phonetic feature and then do well in a matter of imitation, so in imitating, assimilating the other ones.

## Category 3: Difficulties in phonemic discrimination as generator of complex circumstances

DS1: Tava tentando expressar um pouco a ideia... de quanto o universo... é... de uma determinada linguagem, neste caso, o português brasileiro, como tu diz... Se cria e... muitos exemplos que a gente trabalhou aqui: débito, crédito e quanta implicação pode ter nestas circunstâncias ou seja da compra e da venda me mostraram como o som é... de uma é aberta ou fechada criam circunstâncias complexas dentro da sociedade. (English version - I was trying to express a bit of the idea... of how the universe... is ... of a particular language, in this case, Brazilian Portuguese, as you say... it is... creates many examples that we worked here: debit, credit, and how much implication may have in these circumstances i.e. the purchase and sale showed me how a sound is... is an open or closed create complex circumstances within society.)

DS2: Na coisa tão simples né, de que um açougueiro dê meia volta e faça buscar e faça seu trabalho de quando a gente diz costela (dito com [ɛ] fechado em vez de aberto) e que no caso de a gente não ter um bom domínio destes fonemas, a gente acaba tendo o açougueiro não como um açougueiro senão na função de um... professor. De alguém que tem que te orientar o qual... até provoca certa distorção dentro do ambiente. A gente passava para buscar uma costela para um churrasco e

não passava para ter que estar avaliando o grau de dificuldade de inserção dentro da linguagem. (English version - In simple thing right, that a butcher turn around and try to understand and do his job when we say *costela* (said with [ɛ] closed instead of opened) and in case we do not have a good command of the phonemes, we end up placing the butcher at the function of a... teacher. Someone who has to guide you... which leads to some distortion within the environment. We went to fetch a rib for a barbecue not for assessing the degree of difficulty of inclusion within the language.)

#### Category 4: Improvement in phonemic discrimination generates improvement in listening

DS1: Então comecei a perceber isto, em determinado momento, que mais valia escutar, mais valia, passar por uma... terapia fonética, para... corrigir, cuidar, cuidar o... o que eu podia escutar das pessoas. Porque comecei a escutar com mais respeito, com mais prazer, com mais dedicação quando consegui discriminar melhor os sons. (English version - Then I started to notice that, at some point, that was worthy to listen, was worthy, to pass through ... phonetic therapy to correct ... take care, take care of what... I could listen from people. Because I began to listen with more respect, more pleasure, more dedication when I could better discriminate the sounds.)

DS2: (...) e... nesse sentido de fato o grau de... de escuta, e o grau de intervenção que a gente tem faz com que é... possamos sentir-nos mais participativos do grupo enquanto assimilamos melhor a língua. (English version - (...) And...in that sense in fact ... the degree of... of listening, and the degree of intervention that we can have... we can feel more involved in the group while we better assimilate the language.

#### Category 5: Social inclusion determinate by the language domain

DS1: (...) desse modo eu tive a possibilidade de trabalhar desde a fonoaudiologia, a possibilidade de entender que não se trata de um, uma característica do próprio ego, ou seja, meu ego no social se não que se trata, agora consigo discriminar, que são determinadas fonemas, determinadas palavras que conseguindo melhorar na pronúncia, melhora radical a minha possibilidade de incorporação ou... ou de afastamento do grupo, depende a minha disposição na linguagem. (English version - (...)) Thus I had the chance to work since the speech therapy the ability to understand that this is not one, a characteristic of the ego itself, i.e., my ego in social is not what it is, now I can discriminate that certain phonemes are certain words that succeeded in improving the pronunciation, radically improved my

chance of incorporation or... or away from the group, it depends on my attitude in terms of language.)

DS2: A língua falada aqui o português e... se protege, ou marca tenta é... situar em seu próprio espaço em que os fonemas que são corretos dentro dos, dos limites do, do tolerável e o que fica muito distorcido. Bom, eu aprendi que desconhecia muitos fonemas então... dá para perceber quanto que aquele que... vive o português como a língua mãe vai sentir parte de seu mundo, seu mundo linguístico, vai estar sendo agredido quando alguém não faz distinção entre os fonemas. Então eu acho que de algum modo dificulta porque... a gente não tem a ... a capacidade de, de inserção clara, natural, de participação e... a partir disso é, cria é, barreiras. (English version - The language spoken here the Portuguese and... it protects itself, or determinates tries ... to place in their own space in which the phonemes that are correct within, the limits of what is tolerable and very distorted. Well, I learned that many unfamiliar phonemes so ... as you can tell ... he who lives the Portuguese as mother language will feel part of his world, your linguistic world, will be being attacked when someone does not distinguish the phonemes. So I think somehow it becomes difficult because... we do not have the... ability of, getting included, natural, and participation ... this is, it creates barriers.

#### ■ DISCUSSION

During the first months of life, babies have the ability to discriminate most of the phonetic contrasts found in all languages. This ability starts to decline around at six months because the perceptual system of the baby tunes with the linguistic input<sup>4</sup>. For a child in L1 acquisition, the phonemic discrimination occurs naturally, not passive and dependent on exposure to complex linguistic stimuli.

However, what calls attention in DS1, 2 and 3 of Category 1, is that for L2 acquisition in adulthood, phonemic discrimination does not occur naturally. It is the result of much conscious reflection on language as G says: “One thing that is much harder is to create space for new phonemes”.

According to the motor theory of speech perception, the individual is born with the innate ability to discriminate the sounds of any language and relate them to the articulatory movements. However, after the acquisition of L1, the individual would lose some of this capacity because some distinctions are not relevant in their mother language<sup>12</sup>.

Consequently, an individual would easily discriminate the contrasts of native phonemes, but he would have a decreased ability to discriminate non-native phonemes<sup>13</sup>. This would explain why the discrimination of new phonemes of L2 becomes more difficult, not natural. Another evidence is that

children who are learning their L1, in general, do not experience the degree of experienced by learners of L2<sup>7</sup>.

The initial phonological acquisition occurs nonlinearly. There are periods of decreasing at the ascendant curve of development with short moments of regression followed by a resumption of the acquisition, being this phenomenon known as curve in "U"<sup>14</sup>. This phenomenon probably occurs because the child is going through a period of linguistic reorganization.

This phenomenon might explain the DS2 category 1 and 3. G. says that to discriminate a new sound, this discovery goes through a period of greater resonance, as if the phoneme was more relevant, more acoustically prominent than other phonemes. After a while, the interlocutor "would assimilate" this sound and it would not be prominent anymore, with a decrease in its identification. Such discrimination would return, and then get stabilized. Studies<sup>4</sup> show that it is the phonetic experience of learning and not only the time in which this learning occurs that determines the ultimate achievement in the learning of L2 in terms of speech, and that the learning continues until stability is achieved.

The acoustic characterization of speech vary according to the age, sex and the identity of the speaker, as well as the rhythm and intonation of speech<sup>12</sup>. This is evident in the DS1 and DS2 at the category 2, in which G. demonstrates that some people have in their speech production some highlighted phonetic features. With this, it becomes easier to perceive and discriminate phonemes in some people and from this initial discrimination to expand this knowledge to other interlocutors.

Study shows that speech perception and spoken word recognition are typically understood as a reference to the voice of the speaker<sup>13</sup>. It is known that the recognition of the spoken word is affected by the variability of the speaker. Furthermore, the voice of a speaker influences in memory recognition for words, as well as previous familiarity and the experience with a voice in particular the intelligibility of the word.

In DS1 at the category 2, G. says that initially "the only person I thought I could distinguish certain phonemes was you, as speech therapist." It is believed that the initial easiness of discriminating phonemes in speech therapist is due to the fact that at the time of therapy, G. was closer to linguistic stimuli and exposed to a controlled language environment. In addition, the therapist emphasized the target phonemes in his speech productions, leaving them with noticeable acoustic features. And also, the patient was more familiar with his voice.

In L2, the inadequate productions often are not articulatory difficulties of phonemes but difficulties in their discrimination<sup>4,7</sup>. This is another difference in terms of acquisition of L1 and L2: while the child as a L1 learner knows the adult target, the L2 learner

may not know, because its subjacent representation may be different from the one of native speakers<sup>7</sup>.

That can generate complex circumstances of social life, because the speaker does not realize that his production was not satisfactory, so, consequently, he does not understand the confusion of comprehension generated in the interlocutor.

G. cited numerous examples during speech therapy in which this used to happen. For example, when he would ask in a bar a "coca-cola zero", produced as [koka kola sero], he was not understood. The lack of understanding by the waiter was often interpreted as unwillingness by G. Or according to the case of DS2, category 3, where the butcher has trouble understanding his request (a rib, produced as [Kostela]) and he would correct his speech, then altering the vision of his function to G., from salesman to a language teacher.

G. explained at many times during the speech therapy that he did not realize the differences between his and the other speakers production. Therefore, he did not understand some of the complex situations that used to happen. From speech therapy, he started to distinguish these differences, and thus, he could understand the complexity of the situations that went beyond the language issue, as he says in DS1, category 3 (selling situation: debit or credit). As he could not produce the open vowel [ɛ], the interlocutor did not understand which of the two sales situations he meant.

By improving phonemic discrimination and identifying new phonemes in L2, there was an improvement in listening (as observed in the DS1 and DS2, category 4), used here in the sense of understanding the enunciation of another person<sup>8</sup>. G. could notice mistakes in terms of production and so he started to understand the speech of others. With this, new words were added to the L2 vocabulary of G., there was interest in slang and catchphrases, there was an improvement in his social interaction.

This result is corroborated by a research that states that there is an improvement in hearing from increased acoustic experiences, exposure to the L2, and as they are acquired the phonological rules of the studied language<sup>6</sup>.

The difficulty of inclusion into a social group created by the lack of language skills became evident in the DS1 and DS2, category 5. As he did not present a good discrimination of the phonemes of L2, G. fails to get a good production and did not realize his inadequate production. And also, he could not reach all the linguistic meaning of speech of an interlocutor. So, he could not make himself understood and he could not understand other people well. This fact, if was not exposed by phonotherapy, might not be noticed by him, i.e., he would have been to the margin of various linguistic situations without knowing what was going on.

Interestingly, observing the stretch of DS2, category 5 in which G. said "*A língua falada aqui*

*o português e... se protege*." (English version: "The language spoken here the Portuguese and... it protects itself.") This refers to the Saussurean linguistic concepts of signs<sup>15</sup>, composed by an entity that encompasses a signifier (sound-image) and signified (concept). Emphasizing that the sign exists only in operation, as the value, and that for Saussure, the language is a system of values<sup>8</sup>. The speakers of Brazilian Portuguese as L1, do not identify the productions of G. (significant) as belonging to their language, and so they do not give them a concept (meaning), not assigning a value to his productions. Then, they "protect" their language, not accepting / recognizing changes.

## ■ CONCLUSION

From the qualitative study of the speech sample of the patient named G, it became evident the important role of phonemic discrimination in the acquisition of L2.

However, the difficulty of learners of a new language was demonstrated in the discrimination of phonemes belonging to this and not to their mother language. This is reflected in the production and comprehension of discourse by the speaker and the interlocutor.

We believed that the qualitative data presented here will base the Motor Theory of Speech

Perception, showing that phonemic discrimination initially innate, belonging to a Universal Grammar, is being molded by L1 in the first year of life being restricted in the following years, depending on his/her discursive inclusion in the communication between pairs.

This makes us reflect on the ideal period of exposure to L2, which seems to be in the early years, where there is still plasticity in phonemic discrimination, as on the ways of L2 formal teaching, at any age, which should include activities to improve phonemic discrimination of segments belonging to this language. Then, it becomes also evidenced a new field of work for speech therapists, as facilitators in L2 acquisition.

To end, we reaffirm that few current research on the topic of phonemic discrimination in L2 acquisition are found. However, we believe that this issue is relevant to better understand the acquisition of language, L1 and also L2, its pathologies and its interface with speech and social inclusion of the speaker.

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## RESUMO

O objetivo é investigar a discriminação fonêmica para a segunda língua de um adulto falante de espanhol como língua materna e em aquisição do português brasileiro como segunda língua, a partir da percepção do próprio falante. Foi desenvolvido a partir de um estudo de caso, por meio da análise de conteúdo de uma entrevista semiestruturada. Após a transcrição ortográfica da entrevista, foi realizada leitura exaustiva e flutuante dos dados, buscando analisar o que se repetia no discurso do paciente. Evidenciaram-se alguns determinantes que apontaram para categorias discursivas de análise. Foram criadas cinco categorias e selecionadas 11 sequências discursivas para discussão. A partir destas sequências discursivas, evidenciou-se o importante papel da discriminação fonêmica no aprendizado da segunda língua, bem como a dificuldade em desenvolvê-la quando se trata de uma segunda língua em idade tardia, pois ela torna-se restrita, não natural. A discriminação fonêmica parece ser facilitada por algumas características do interlocutor, que tornam os traços acústicos mais salientes. Além disto, a alteração nesta habilidade pode gerar circunstâncias complexas na interação entre os pares. Quando há melhora na discriminação fonêmica, há melhora na produção e na compreensão da fala, evoluindo o domínio da língua e consequentemente a interação social. Os resultados permitiram observar que o melhor desenvolvimento da segunda língua parece acontecer quando a exposição a esta ocorre nos anos iniciais, pois ainda há grande plasticidade das habilidades auditivas e a discriminação fonêmica não está restrita sendo um indicativo de que o ensino formal da segunda língua e as habilidades de percepção deveriam ser estimuladas nesta fase.

**DESCRITORES:** Percepção da Fala; Percepção Auditiva; Multilinguismo

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