



TOPIC:

**THE OVEREXTENSION OF L1 SPANISH SPEECH PATTERNS BY BILINGUAL
L2 ENGLISH HIGH SCHOOL STUDENTS**

**Research Project Prior to Obtaining the Master's Degree on English
Pedagogy as a Foreign Language**

Line of research:

Innovative Pedagogies

Author:

Lcdo. Francisco Israel Brito Saavedra

Director:

M.A. Melanie Schmidt

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Author:

Francisco Israel Brito Saavedra

Mr. Schmidt

Melanie Schmidt, M.A.
MEMBER

f. _____

María Soledad Miranda Salazar, Mg.
MEMBER

f. _____

Elsie Ileana Vasquez Soria, Mg.
MEMBER

f. _____

Juan Carlos Acosta Teneda, P. MSc.
POSTGRADUATE OFFICE DIRECTOR

f. _____

Hugo Rogelio Altamirano Villaroel, Dr.
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DEDICATION

It is with heartfelt gratitude and warm affection that I dedicate this dissertation to:

My beloved girlfriend Paula Velez

My mother Ana Maria Saavedra

My siblings David, Tetu, and Ana

My tutor, Melanie Schmidt, and all my friends who were part of this journey.

RESUMEN

La presente investigación lingüística se enfoca en la extensión del sonido vocal español /e/ en palabras que empiezan con >s< + consonante del idioma inglés en los estudiantes nativos hablantes de español del colegio particular CEDFI “Comunidad Educativa de Formación Integral” de Cuenca, Ecuador, en el período escolar 2020-2021. Este trabajo investigativo fue llevado a cabo desde un enfoque mixto, el cual también tomó como base investigaciones previas bibliográficas, electrónicas y de campo. También, en este proyecto se trabajó con el total del universo investigado ya que el número de participantes fue apropiado para la aplicación de los instrumentos y el desarrollo del trabajo. Los resultados fueron debidamente analizados y tabulados. Se pudo concluir que en la pronunciación de palabras en inglés que empiezan con s + consonante por parte de los estudiantes, se genera una extensión de los patrones de la fonología de español conocida como “epéntesis” afectando la producción oral en inglés. Si la pronunciación de estas palabras es enseñada correctamente, se ayudará de manera significativa a la producción oral del inglés como lengua extranjera.

Palabras clave: Interferencia, adquisición de lenguaje, patrones fonológicos, palabras en inglés que empiezan con s, epéntesis.

ABSTRACT

This linguistic research project focuses on the overextension of the Spanish /e/ sound in English word-initial >s< + clusters produced by Spanish L1 students of CEDFI private school in Cuenca, Ecuador, in the 2020-2021 school period. This work was conducted from a mixed-method and based on previous bibliographic, electronic, and field research. Moreover, the entire universe cooperated since the number of participants was appropriate for the application of instruments and the development of the work. The results were suitably analyzed and tabulated. The conclusion shows that in the students' pronunciation of English words initial >s< + consonant an overextension of Spanish speech patterns known as "epenthesis" is generated, affecting the English oral production. If the pronunciation of these words is taught correctly, it will significantly help to improve the oral production of English as a foreign language.

Key words: Interference, language acquisition, phonological patterns, English s + cluster, epenthesis.

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INTRODUCTION

The overextension of certain sounds from the mother tongue can affect the pronunciation of a second language. It is important to mention that pronunciation is one of the most significant features of a language required for authentic communication among people as it is closely related to the meaning of words. Accordingly, the relationship between oral production and communication can lead to misunderstandings. In English, sometimes the message loses its communicative quality because certain sounds transferred from the mother tongue affect or hinder the information to be transmitted (Kurniati, 2016). For this reason, it is essential to give special attention to pronunciation. The central purpose of this investigation is to analyze the overextension of a feature of Spanish that affects the production of some English words.

This research project specifically seeks to illustrate in the best possible way the English word-initial >s< cluster consonant in the pronunciation of Spanish speakers considering that there are a large group of these words. To reach this objective, it is necessary to mention some issues that Spanish speakers have in the production of English as an L2. The main difficulty in pronunciation of the investigated cluster is the epenthesis, the development of a vowel /e/ sound in written words-initial >s< cluster due to a transfer from the mother tongue to the L2. This fact, in turn, generates mispronunciation of such words.

Veiga-Perez (2017) explained that one of the contrasts between languages has to do with how phonological each of them is. He mentioned that 26 English graphemes represent 45 phonemes. On the other hand, 24 Spanish graphemes represent 24 phonemes. A phoneme is the smallest unit of sound made to pronounce words and played by the oral apparatus. Differently, a grapheme is a graphic sign known as letters of a written language. These letters represent phonemes. Therefore, English is said to be less phonological, so this might cause interference. In the same way, there are contrasts in the sounds of consonants and diphthongs in both languages, so Spanish speakers have to get familiar with the English phonological system to pronounce words correctly to acquire native-like pronunciation.

After an extensive analysis for the investigation of this research paper, some previous studies related to theories of first and second language acquisition, inference, L1 interference, speech production, and phonological transfer were found on different sources such as Research gate, Google Scholar, and Academic Microsoft. However, the main focus of the study is the speech production of L2 English words that start with a consonant >s< grapheme cluster, followed by a plosive grapheme /p t k/, such as in >sp< from the word "sports".

The research problem

In linguistics, the term "cluster" is understood and defined as the consecutive grouping of consonants or vowels in a single syllable or two (contiguous). This combination has to be considered in different languages. Otherwise, the learner would have a wrong understanding of what he wants to express as in the case of the words "island, being, spread, or step". However, this project is specified only to the study of the words initial >s< cluster >st, sp, sk< which is nothing more than the consonant >s< at the beginning of a word proceeding from other consonants like "student, stadium, space, skin", etc.

It is known that, when learning a foreign language, in this case, English, the tendency is for the speaker to pronounce everything he reads as a consequence of the fact that his mother tongue is Spanish. However, it is normal for these problems to occur in students whose level of English is zero or very low. But, considering that when a certain level is acquired in the foreign language, it is possible to gradually differentiate the pronunciation of the Spanish language from the pronunciation of the English language. Thus, when learning English, the Spanish L1 students tend to combine the mother tongue and the foreign language pronunciations without noticing that both are different.

The main hindrance of the investigated cluster pronunciation is the epenthesis /e/, from which other types of difficulties arise. In other words, the specific case of epenthesis is to insert an /e/ vowel sound in words-initial >s< cluster due to a transfer from the Spanish language to the English one. As a result, this issue generates

incorrect pronunciation of the enunciated words. Besides, it is expected that the students commit this error in their oral production to show the overextension of L1 Spanish speech patterns in English words. This repetitive fact has been stated by various authors who are exposed in the development of this research project.

Defended idea

Work Hypothesis: L2 English bilingual high school students overextend L1 Spanish speech patterns.

Objectives

General objective

To examine the overextension of L1 Spanish speech patterns (epenthesis) by bilingual L2 English students from CEDFI high school.

Specific Objectives

1. To scrutinize L2 English speech production focusing on words-initial >s< cluster employing a voice analysis program.
2. To notice the overextension of Spanish L1 sound patterns in L2 English.
3. To investigate previous studies that can help avoid L1 interferences.
4. To disseminate the results within the educational community.

Research Justification

Due to great demand in the global market, today is essential to master a foreign language and even more if it is the English language since this is precisely one of the most used for communication between people overseas. Moreover, this language is necessary for different fields in which a person usually develops. Thus, the correct use of phonetic rules that this lexicon contains must be known for good pronunciation and communication. Controlling a standard English level means understanding what the speaker transmits, and at the same time, making your

statement reach the listener in such a way that he can fully understand the message. However, most of the times teachers and students are inclined to make mistakes in the pronunciation of the English language due to diverse factors.

CHAPTER I. STATE OF ART AND PRACTICE

1.1. First language acquisition (FLA)

The acquisition of the first language is a process that consists of obtaining human language as an instrument constituted of grammar, linguistic symbols, verbal and corporal expressions to reach communication (Brown, Malmkjaer, & Williams, 1996). In addition, all living beings have a system of communication that enables them to transmit ideas and thoughts. However, only human beings have the tools to communicate through speech. These tools are simultaneously composed of vocal signs (oral language) and gestures (visual language), making them one of the most complete communication systems.

Communication has been existed since we were born, even though we are not aware of it. Utilizing some sounds such as crying, smiling, babbling, screaming, or gestures in the case of newborns, human beings make to know their requirements as a part of their needs. From this starting point, some scholars introduce theories and contributions to determine the origin of communicative ability. One of them is Noam Chomsky (1957), who ascertains that this ability is an inherent capacity in the human being which is developed in the mind from the moment of birth and through genetics. Language is an instrument that must be acquired and takes strength from the environment, with the features of the culture in which the child grows up to be able to learn and employ it properly.

For a long time, linguists have researched how first language acquisition (L1) takes place and the role of the cognitive processes involved in its development. As a consequence, there have been numerous studies that have created debates from different perspectives to observe what may have influenced the evolution of the language. Mehrpour and Forutan (2015) mentioned that the history of language learning theories from Skinner's Environmentalism to Piaget's Constructivism to Chomsky's Innatism has been related to the controversy about if cognitive process and structure are limited by an innate mechanism or environmental input.

Some linguists like Noam Chomsky and Eric Lenneberg have the hypothesis that children are born with a grammatical system that is innate and permits them to learn a language. Diversely, linguists like Brian Mc Whinney (2005), Catherine Snow (1988), and Elizabeth Bates (2001), state that language acquisition is the result of the interaction between children and people around them. Moreover, William O'Grady (2003) declared "Nativism" in his work without "Universal Grammar". Notwithstanding different theories, these cannot be separated since they are a complement from each other that serves for the analysis of different language studies (Mehrpour & Forutan, 2015).

Child language evolution is considered an important issue because it leads linguists to devise methods and techniques used in the language acquisition field. According to Vygotsky (1989), the child's first language acquisition supports him/her learning the English language because it does not intervene in the process. When the two languages , the first or mother tongue and the second one, have cultural, affective, and social values, children construct their learning. Also, they promote comprehension skills in the daily life of the classroom, where they interact and exchange experiences and ideas. The determination of cognitive development, according to this author, comes from the relationship between the student and his thoughts.

Thomson (1993) argues that there are inherent factors of a language that influence its learning. Some languages are more demanding to learn because they do not have a relationship to the roots of our first language. For example, it is easier for Spanish speakers to learn any Neo-Latin or Romance languages (French, Italian, Portuguese) because they come from the same family. On the other hand, it is difficult for Spanish native speakers to learn Latin, Greek, Anglo-Saxon, or German languages. All languages of the world have diverse and specific situations and language patterns. Therefore, these patterns must be identified, practiced, and mastered to learn the language.

It is of paramount importance to take into consideration first language acquisition in this research project to analyze the possible causes of a vowel sound overextension that could affect the pronunciation of English words-initial /s/ + cluster.

The exogenic Model: Behaviorism

The behaviorist model is a theory of L1 acquisition that was founded by Watson (1913) and it has been developed slightly as a reaction to traditional grammar. According to Mehrpour and Forutan (2015), this theory took place in Skinner's operant conditioning model and its main principle investigates human behavior by observing the interactions of stimulus-responses and the association. Consequently, it is mentioned that "Behaviorism" considers what the children learn is the result of reinforcement and reward habits that handle behavioral changes in the environment. In the same way, different behaviorist perspectives declared that an efficient linguistic attitude is an appropriate response to a stimulus (Dastpak, Behjat, & Taghinezhad, 2017). Therefore, children tend to repeat assisted linguistic responses that are reinforced and consequently changed into habits.

The endogenic Model: Nativism

Language acquisition is a controversial phenomenon that has led to plenty of discussions and questions that need to be clarified through different approaches. Therefore, various linguists attempt to reach an agreement that language should be observed as a computational system in charge of the creation and clarification of sentences through different categories of words and a kind of mental grammar that provides data about linguistic properties (O'Grady, 2003).

Experts in the field assume that the system of language acquisition development is so difficult and cannot be explained by "Behaviorism" since it does not take into consideration the role of thought and cognition. The nativism theory of Chomsky (1986) states that the characteristics of the computational language system, also known as "Universal Grammar" are not acquired by the children, but they are innate features that cannot be transferred through communication or imitation from people

to people. Moreover, the authors also mentioned that this theory simplifies the first language acquisition process since children do not acquire the basis of a language that is present in all languages but this knowledge is part of their genetic predisposition.

The FLA models mentioned above are relevant in this research project because they explain that language development depends on other characteristics around the learner. For this reason, the role that language plays in cognitive development is a controversial issue that might explain the overextension of Spanish speech patterns.

1.2. Second language acquisition (SLA)

Ellis (2010) declared that SLA emerged to understand how a second language is acquired by the learner inside and outside the classroom to integrate those experiences that facilitate the learning process into the language teaching system. Therefore, there is a connection between research in SLA, language instruction, and theories established from the beginning that increasingly attempted to verify SLA as an academic system. For example, how research in SLA supports language teaching strategies such as the total physical response and the ongoing interest in focused instruction.

Additionally, Alcon (2002) explains that the development of the first methods to teach a second language was not carried out by pedagogues but by academics, diplomats, or adventurers with broad expertise and cultural background. Their interest in the acquisition of other languages emerged from living together in diverse communities. According to the previous author, the historical progression of teaching methods shows a connection between the grammatical and the conversational tradition. The author concludes that the normative knowledge of a language must start from the global description of it, an aspect that the traditional teaching of grammar does not consider.

Bilingualism

The importance of “Bilingualism”, the ability to convey a message in two languages, responds to the necessity of a globalized world. From an early age, bilingualism facilitates the acquisition of other languages while developing listening, adaptation, and creativity skills for interaction with people from different language backgrounds (Antoniou, 2019). The collection of all these metalinguistic abilities supports the learning processes of other educational disciplines, prepares the student to conceptualize the two linguistic systems, and contributes to the improvement of the mother tongue.

Moreover, the development of symbolic, abstract, and logical skills is more remarkable in bilingual children than in monolingual ones. A bilingual person can understand, communicate and express himself/herself, clearly and precisely, in two languages. Montrul (2013) ascertained that many variables, for instance, the order of language acquisition, the degree of use, the status of the languages in society, the age of acquisition, the context of the acquisition, and the level of knowledge of both languages, discriminate and determine what it is to be bilingual. This information aims in this investigation to relate the first and second language patterns and to analyze possible causes of mispronunciation.

Differences between L1 and L2 acquisition

Various linguists such as Krashen (1982) and Ghazali (2006) have investigated the relationship between the acquisition process of our first language with the acquisition of the second one to see to what extent we find elements that can alter the production of either. It is important to consider the characteristics and conditioning factors of acquisition in both cases to have a broader idea of L1 and L2 development. Some aspects based on the L1 learning process are used as methods and procedures in the L2 learning, with a different perspective, with the idea of whether these aspects are effective in the first case they should be employed in the second one to obtain better results. However, if the circumstances and conditions

that affect the learning process are different in each case, their results will also be different.

The first factor of language acquisition to examine is age. There is a common belief that children tend to master a language better than adults do. In regards to this argument, Lightbown and Spada (2013) explained that babies are more sensitive to speech sounds because they count on auditory discrimination, which is the ability to differentiate or discriminate, by auditory means, phonological and phonetic characters. Furthermore, children don't discern sounds that are not phonemic in the languages spoken around them, namely, they stop distinguishing phonetic features of languages that are different from their own.

Another important factor mentioned by the same authors explains the children's interplay with the environment. Some theorists emphasize the importance of interaction as a basis for learning. This trend has been called "social interactionism" and demonstrates that language develops as a result of a communicative exchange between the child and his environment. Concerning this, it is not enough for infants the input received from electronic devices to retain and develop the ability to differentiate phonemes. Instead, they need interaction with human speakers (Lightbown & Spada, 2013).

What seems quite simple to the eyes of a child, actually hides a complicated learning process for adults, even despite the cognitive development that they already have. Although it will be arduous for adults to acquire an almost native level of the second language, they experience more rapid development in the early stages. Deng and Zou (2016) stated that adults have more developed cognitive systems, self-monitoring abilities, and logical analysis that permit them to integrate new knowledge faster than children. Also, they have a conscious learning method that helps to identify errors and correct them. In this way, an adult is much more efficient when acquiring a new language.

Acquisition scenarios (*learning vs. acquiring*)

Interest in this topic emerges from the desire to understand how the first and second language is acquired and to explain the differences between the concepts of acquisition and learning. Even though they may be similar words, linguists make a clear distinction between them. Nor and Ab Rashid (2018) mentioned that “acquisition” happens naturally and effortlessly mainly because it is a subconscious process in which the child does not necessarily study the formal structure of the target language. This is how everybody acquired their mother tongue. Babies' brains are exposed to what people around them say in a natural way, assimilating the logic behind the structures until it results in the ability to understand and express themselves in their language.

On the other hand, the theory of Krashen (1982) indicated that the term “learning” refers to a conscious process that involves intentionally studying structural aspects of the target language in which the learner knows grammar rules, and is able to talk about them. The circumstances when learning a second language are very different from when we acquire our mother tongue. Notwithstanding, the functioning of our brain is identical and even much better. We all acquire a language the same way since it is a human cognitive process like breathing or walking. Thus, learning a second language can be easier and faster because the learner already has cognitive references to a previous language (Nor & Rashid, 2018).

The differences between acquiring a language and learning it are of great help in this research project to understand and explain the possible reasons for the appearance of an epenthesis /e/ in English words-initial /s/ + cluster pronounced by native Spanish speakers.

Controlled and uncontrolled language acquisition

Research studies on this topic show common elements between language acquisition in the class and language acquisition in the environment. Although today it is not easy to differentiate between controlled and uncontrolled language learning,

both concepts have been used in different branches of education and foreign language. Saxalber (2017) stated that in many circumstances, “controlled” and “uncontrolled” are almost synonymous with “written” and “verbal” language. The author also mentioned that this form of language has a noticeable influence on external and internal factors such as the languages learned, their structures, and the learner's cognitive capacity.

More recent scientific studies indicate that uncontrolled acquisition refers to natural language learning similar in many different languages. In this way, a native speaker manages to use various registers such as the formal and informal language variants, so they must first acquire the ability to do so. Differently, controlled acquisition refers to the language learned in school and educational institutions. This controlled acquisition is a standardized language used to correct the "outside world" language (Saxalber, 2017).

SLA theories

The general purpose of learning a second language is to adopt various social practices that allow the learner to satisfy his communicative needs and to create awareness about the existence of other cultures. In several institutions it is highlighted the importance of acquiring a second language in the teaching-learning process. But such acquisition resembles to be an extremely easy or difficult task depending on the different variables and factors that affect it. The idea of learning a second language is nearly related to the concepts of the acquisition of a first language. However, this concept has been elaborated from various disciplines and with different theoretical and methodological approaches.

If a person starts to learn a language from early infancy, he will acquire it as his second language. However, linguists also observed that the older the learner is, the more difficult it is to acquire the language. Piaget (1961) investigated one of the best-known theories about children learning development capacity. This theory ascertains that learners' childhood passes through specified stages by the intellect and the ability to perceive. Moreover, the author declared that the principle of logic

is developed before acquiring language through the sensory-motor activity of the baby that is related to the interaction with the sociocultural environment.

On the other hand, Vygotsky (1989) explained that from birth to two years old, the child practices control to obtain and prepare all his senses for the outside world. For example, he uses his hands to touch, grasp, push, pull, and release objects. These practices tend to be more knowledgeable when the child encounters an intense and stimulating experience that invites him to repeat it continuously, or at intervals. As a result, these exercises contribute to skills that are embedded in psychic schematics or coined patterns. Piaget (1961) called this process “assimilation” or early stimulation. Both Piaget and Vygotsky clarify that this is the most important learning and growth process of the human being, which will last for the rest of life.

Piaget demonstrates that the period separating two and seven years constitutes the pre-operational stage, where children discover interaction with their surroundings in a complex way as they use mental representations and words. Additionally, they are egocentric and consider that other people conceptualize the world in the same way they do. The concrete operational stage takes place from seven to twelve years old approximately. Here, a decrease in egocentricity is observed to focus more on stimuli. The child already has the concept of grouping in his mind, but he applies it only to those concrete objects he has experimented with in his senses.

Besides, the neurologist and linguist Lenneber (1975), pioneer of the hypothesis on language acquisition, bases his thoughts on physiological issues, such as neuron density or the frequency of brain waves. The results obtained in these areas helped affirm his hypothesis of the critical period occurring when children reach puberty. In this period, the capacity to acquire a second language decreases significantly. Similarly, Piaget (1961) considers puberty as the formal operations stage that appears at the age of twelve. From that moment on, the brain has less capacity to learn a second language.

Lenneber (1975) asserts that one of the significant concepts of his hypothesis regarding language acquisition is “cerebral lateralization”. This concept explains that

each hemisphere of the brain concentrates on specific functions. For instance, on the left part, language processes predominate, but on the right, the production of intonation prevails. Linguists from different studies mention that not only a physiological issue restricts the language learning ability at a certain age; nevertheless, other facts related to age affect this process, too (Bongaerts & Poulisse, 1989).

This last author said that some of the barriers that might hinder the learning process are: the motivation to learn a second language, the integration into a foreign-speaking environment, time availability to study and practice, the mother tongue interference, etc. However, children do not have problems assimilating a new phonological, semantic and grammatical system. Furthermore, they are less likely to commit mistakes than adults, who present more difficulties learning another language. So, the ideal period to learn a second language is at an early age, where brain plasticity emerges.

Other authors such as Krashen (1982) inform that numerous emotional and attitudinal circumstances can provoke poor language learning. For example, students at basic levels feel more anxiety than those at intermediate or advanced levels. Therefore, it is deduced that as learning increases, anxiety decreases. Children do not acquire a language spontaneously because it must be learned, and its development is fundamental before the visual learning of the alphabet begins. This corroborates that as language reflection increases, anxiety decreases.

Language is one of the principal capacities of human beings to communicate and interact with others (Lindstrom, 2000). The author said that its construction requires a complex process that essentially involves the senses of hearing and sight. Furthermore, the new linguistic theories for English language teaching at an early age are retaking phonological awareness as a tool that contributes to both the teachers' knowledge and the teaching-learning process in the acquisition of another language. Phonological awareness is defined as the ability that permits children to recognize, classify, describe, carefully manipulate the sounds or phonemes that form the words.

Identity hypothesis

Identity is considered an aspect of great interest when learning a second language since it confirms how a language constitutes a powerful means of representing the uniqueness of each person in the environment (Dervin & Jackson, 2018). In addition, language is a significant feature of people's identity as it is a linguistic characteristic acquired in the conscious or immediate cognitive command of the person. Our way of speaking transmits a lot about ourselves because it is not only the expression of our identity, but it is part of it. Besides, people are interpreted through his association with social groups such as families, schools, and workplaces that share a common history, a common language, and similar customs.

Concerning identity, Norton and McKinney (2011) declared two relevant factors of this approach. First, second language acquisition scholars need a precise identity theory that incorporates the language learner and society. Second, the scholars need to address how the relationship of powers in social life influences the student's access to the target language. For the authors, the term "identity" represents the way the learner experiences the connection to the world, how this connection develops over time, and the perceptions they have for the future. In this way, when people interact with others, they negotiate and relate a sense of self with the society in which they live.

Language is one of the traits that engage people's identity because it is not a system of particular symbols to convey a message but a demanding social practice that identifies the culture and general aspects of people where relationships are negotiated, defined, and maintained. It also establishes a cultural creation of the identity of the individual and social groups through the particular ways in which dialects and languages mainly develop. In addition, social factors stand out in the structure of the linguistic system at different levels, so it is recommendable to learn a language based on specific contexts (Norton & McKinney, 2011).

Likewise, Duff (2012) asserted that learning another language, the experiences and background of the learner, have been conceived in many different ways. All the data

related to language learners is accompanied by characteristics of their identities, aspirations, and abilities that reflect inferences about SLA. Additionally, the author established that researchers relate language learners to terms that reveal incomplete processes of learning like interlanguage speakers, immigrants, non-native speakers, refugees, fossilized and second language users, and many others. The terms “language”, “identity”, and “culture” together consider roles that affect their ability to intervene in the social processes and strengthen the life of a community. For this reason, it is not possible to recognize language in itself. Instead, it is distinguished in its relationships that give meaning to life in the community.

Contrastive analysis hypothesis (CAH)

The influence of the mother tongue in second language learning has been a matter of great controversy in the linguistic field. This influence reveals how the first language conditions the acquisition of the second language and examines the similarities and differences between them. Due to these and other issues, the Contrastive Analysis Hypothesis (CAH) arose. Selinker and Gass (1992) indicated that this hypothesis is a research model that mainly proposes comparing the linguistic systems of two languages, generally between the mother tongue and the target language, in order to ascertain possible errors to separate what is necessary to learn and what is not in SLA. In other words, it reveals the quantitative differences between linguistic systems.

The authors also mentioned that the CAH compares in detail the structure of the sound, syntactic, morphological, and cultural systems of two languages to detect correlations and variations. This analysis intends to predict functions of the language that will be either easy or difficult to learn. Likewise, the most challenging or simple issue to learn the structure of a second language comes from the meaning, form, and distribution of the grammatical structure and the learners' habits to transfer aspects from the first language to the second one. Thus, this systematic comparison of two or more languages aims to serve as a basis to develop teaching materials and instructional techniques in the class (Gass & Selinker, 1992).

In the same way, Khansir and Pakdel (2019) declared that the principal purpose of this hypothesis is the elaboration of contrastive features of the language where a hierarchy of the different levels of grammar is set in a parallel way to establish levels of difficulty throughout the learning of L2. The first works found of the CAH date back to the mid-1940s since it is based mainly on the research of Fries (1945) who stated that this hypothesis follows a process of description, selection, comparison, and prediction of two languages.

1.3. Terminology

Language transfer

Schachter (1983) said that the phenomenon of linguistic transfer is a process generally associated with situations of contact between languages, either in the context of entire populations or at the level of the individual in the acquisition of a second language. Furthermore, linguists like Gass and Selinker (1992) pointed out that the term “transfer” is somewhat ambiguous that refers to the influence of the L1 on the L2 whether they manifest themselves in the form of errors or not. If the structure of both languages is similar, it is called “positive transfer” and can facilitate the learning process. On the other hand, if they are different, it is called “negative transfer” and an interference occurs. It leads to error because what the student learns in the L1 will hinder the learning of the L2.

Interference

It should be noted that the phenomenon of the influence between languages or the influence of the effects of the mother tongue on the second language is not exempt from conceptual and terminological problems. At first, the most used term to refer to such a linguistic influence is interference, which carries a negative connotation. The CAH held that the errors made by students of a second language were due to linguistic interference with the mother tongue. According to Lekova (2010), language interference is one of the common difficulties in language learning and teaching. From a psycholinguistic perspective, this interference is mainly based on the idea

that the L1 works as a filter conditioning the acquisition of the L2. In this way, the learners will use their general linguistic knowledge to foster the learning of the L2.

Inference

In SLA reading, inference is part of the thinking skills that support comprehension to identify non-explicit data and help people discover logical sequences of information. This process occurs when the learners find words they are unfamiliar with in a text (Niwa, 2019). Moreover, it is linked to cognitive activities strengthened from the social, cultural, and academic context accessing implicit information from messages to complete the intrinsic one, both in their mother tongue and the foreign language. Furthermore, Hostetler (2013) explained that inference lies in deducing a hidden meaning from a known one and leads to the use of cultural, syntactic, and logical keys to detect the meaning of strange terms. Adapted to the lexical field, inferring the connotation of a word is to obtain its semantic content through linguistic or extralinguistic keys present in the text or the reader, respectively.

Epenthesis

The epenthesis consists of the addition of an interfering sound in a word. It is perceived as a type of intrusion since its phonology is not predicted but appears in the concrete phonetic realization (Hall, 2011). The following sub-category can be differentiated according to the position that the epenthesis occupies within the word. The prosthesis is the addition of a component, frequently vowel, in the initial part of a word. An example of this is the insertion of /e/ in forms such as /estri:t/ >street< that appears regularly in the English spoken by native Spanish speakers and that is the object of investigation in this article.

The functionality of the epenthesis has been highlighted as a regular phenomenon in the acquisition of L2. In addition, (Hall, 2011). characterized epenthesis as one of the most frequent communicative approaches in interlanguage systems. In this way, it should be noted that the phonological acquisition of L1 and L2 shows contrasting tendencies when facing the production of complex consonant groups, especially in

an initial position. In the acquisition of L2, it is more common for vowel epenthesis to take place (Canale, 2011). On the other hand, the omission of some consonants is the most frequent strategy in the acquisition of L1.

In SLA studies, various authors reveal in their research definitions regarding epenthesis. Gibson (2012), Barchi (2019), Sampson (2010), Biers (2017), and Eddington (2001) agree that this terminology can be also identified as prosthesis, prothesis, or epithesis. These authors define this linguistic phenomenon as the addition of an extra vowel sound /e/ or a schwa sound in the case of words-initial >s< cluster in foreign languages, especially in English as it is the one most used for communication in people with different languages background. In this way, different views are found as synonyms for epenthesis, but certainly, in this research, it will be interpreted with the last terminology addressed, that is, the act of placing an /e/ sound before words-initial >s< cluster.

Since the focus of this study is the overextension of a Spanish /e/ sound in English words that begin with /s/ + cluster, it is essential to consider the terms that refer to these features of the mother tongue that affect the second language. Also, the information presented above explains the concepts that are used in linguistics to refer to this phenomenon.

1.4. Phonological Patterns

Jones (2014) argues that the perception of the sounds that represent words contributes to the child's unconscious approach to writing. When he finds a way to graph a sound and recognize regular spelling, he can independently write other words. Moreover, it is worth mentioning that the language in children is consolidated until the age of five. As well, this process must be respected by teachers. Children need to manipulate the sound of the phoneme and not the name of the letter because this can confuse writing.

Phonological patterns are complex phenomena analyzed from different perspectives that consider various linguistic units in their development. Rose and

Inkelas (2011) explained that the word “pattern” refers to any variation between the original sounds produced by a child and the adult-like sounds the child is attempting. It is a challenge to interpret phonological patterns since child and adult phonology have been associated with perception and production. Spanish and English syllabic structures will be analyzed to have a better idea of the similarities and differences of these two languages present.

Spanish syllable structure

The necessity of the language for the human being is so great that when difficulties arise and persist throughout school life, they affect all areas of development and become causes of pronunciation problems. The phonological acquisition process begins from birth with screams that constantly change. Acosta and Moreno (1999) ascertained that in the second month of birth, phonemes will appear and continue with the production of the first sounds. In the case of Spanish, it prolongs until the child displays simple vibrating consonants like “*pero*” ‘but’, and complex ones like “*perro*” ‘dog’. Furthermore, between the ages of six and seven is the period in which Spanish phonology is completed.

Ciccia-Gabillo et al. (2009) explained that many languages hold a syllabic structure formed by an essential core, the vowel, and by a series of arbitrary consonant sounds that appear before and after it. For example, the Spanish word “*nariz*” ‘nose’ contains two syllables >na< and >riz<. The core of the first syllable, >na<, is the vowel /a/ and the core of >riz< is /i/. In Spanish, most syllables present an initial consonant in their structure. The first syllable of the previous word >na<, begins with the consonant >n<, and the second syllable >riz<, begins with >r<.

Additionally, the beginning of a syllable in Spanish can be formed by a consonant group as in the word “*flor*” ‘flower’, which starts with the consonants >fl<. Besides, some syllables do not have an initial consonant as in the first syllable of the word “*uña*” ‘nail’. Furthermore, many syllables have a final consonant. In the word “*nariz*” the first syllable does not have a final consonant. On the other hand, the second

syllable, >riz<, does have it, the consonant >z<. Finally, all these elements come together and make the phonological unit called syllable (Ciccia-Gabillo, et al., 2009).

Furthermore, Canale (2011) researched the “syllabic attack” which is a phenomenon that occurs in the Spanish and English syllable structures. This phenomenon is an expression that refers to the consonant section that introduces the nucleus of the syllable. For example, the /p/ in “*pan*” ‘bread’ or /m/ in “*mar*” ‘sea’. The “attack” can be simple when the section consists of a single consonant as in the previous cases. On the other hand, it can be complex when it has a consonant group, as in >tr< like in “*trabajo*” ‘work’. Both Spanish and English present complex attack syllabic structures, although they differ in the consonant combination they allow.

“Word-initial >s< clusters” in Spanish

Mathews (2007) defined the expression “cluster” as a grouping of terms or voices with a strong relationship. This expression is used more extensively since it refers to the set of words rather than phonemes. Additionally, Cardona (1991) explained “cluster” as “nexo” which is the accumulation of multiple phonetic sounds pronounced within a syllabic structure. These sounds are represented in different ways in writing and speaking.

In regards to the phoneme /s/, Broś (2013) commented that its aspiration is one of the most studied phonological processes in Spanish that has been analyzed from the phonetic, phonological, and sociolinguistic perspectives. This phenomenon itself is a set of phonological processes with various distributions, depending on the dialect of Spanish-speaking countries. The aspiration of the Spanish /s/ evolved through time resulting in a mixture of strategies focused on modifying the position of >s< at the end of the syllable. Consequently, the aspiration spread to other phonetic environments, occurring not only in the middle but also at the end of the word and at the end of the sentence, then also between words in constant communication.

The phonological environment also plays a crucial role in the pronunciation of the Spanish /s/. According to Ramírez and Vázquez (2016), it refers to the circumstances in which the /s/ phoneme occurs among neighboring phonemes. They mentioned that the phoneme /s/ tends to weaken when surrounded by vowel phonemes. It is possible that this weakening emerges as a consequence of the necessity to change from one vowel to another without obstructing the free passage of the air stream. In the production of a vowel, the air stream passes through the mouth without an obstruction. Now, if the phoneme /s/ is between vowels, the tip of the tongue narrows upon the alveolar to generate friction, and the free passage of the air is partially restricted.

In Spanish, there is a rather limited number of clusters so that the phoneme /s/ occurs in syllable-initial position when not followed by any other consonant. So, there are no >sk st sp< combinations possible. Whereas in English the onset (beginning of a syllable) may optionally contain up to three consonants >str< as in >street< and the coda (center of a syllable) may be formed by one to four consonants.

English syllable structure

English phonological processes that result from the gathering of segments into syllables follow general principles of the language. Regarding English syllable structure, Kessler and Treiman (1997) observed complete constraints in phonemes patterns of English syllables. For instance, the /h/ can occur only at the beginning of a syllable, and /ŋ/ can occur at the end. In addition, some phonemes combinations take place in the language, whereas others do not. Generally, in the American English pronunciation, the phoneme /ɑ:/ can be placed before /r/ at the end of a syllable like in >car<, but /æ/ cannot, and this rule does not have exceptions. There is proof that the syllable holds a kind of inherent structure because in some languages there are more limitations at the end of the syllable than at the beginning.

However, in English, these limitations are not explicit. Consequently, there has been some discussion about the irregularity in phonetic constraints for internal syllable

structure. As in the case of the Spanish syllable structure, Canale (2011) stated that English also presents the “syllabic attack”, the expression that relates to the consonant segment that introduces the nucleus of the syllable. For example, the /p/ in >pen< or /m/ in >mask<. These are examples of simple “attack” since the section consists of a single consonant. However, In English, the attack can also be complex when it has a consonant group, as in >sp< like in >speak<.

Word-initial >s<+ stop clusters in English

Respecting the complex syllabic attack, some relevant elements of the English language have to do with consonant clusters in word-initial position. Celce- Murcia, Brinton, and Goodwin (1996) indicated that one of the most common combinations starts with the consonant >s< followed by other consonants such as >p, k, l< etc. Within this set of word-initial >s< + stop clusters it is mentioned the letter >s< at the beginning of a word proceeding from another consonant that create the following phonetic groups: >sk<, >sl<, >sm<, >sn<, >sp<, >st<, >sf< and scarcely ever >sv<. So, for instance, there are words like >speak<, >school<, >skin<, >scare<, >square<, >sky<, >small<, >snake<, >stir<, >sphere<, >stop<, >star<, etc.

Differences of word-initial >s< clusters in Spanish and English

The present research project focuses on the production of word-initial >s< cluster in two different languages. This sort of grouping does not exist in Spanish, so it can be a challenge for Spanish-speaking learners to master the pronunciation of English words with this feature (Veiga-Pérez, 2017). Indeed, attempting to produce foreign sounds with the mother tongue is a problem when conveying thoughts. For this reason, learning the pronunciation of word-initial >s< clusters in English is of exceptional significance to avoid errors in diction for effective communication. For example, pronouncing the phrase >I speak Spanish< would not be a problem for two English speakers. On the other hand, if the person who produces the message is a Spanish speaker and the person receiving it is an English speaker, there might be misunderstandings.

Kelly (2008) explained that there are some word-initial >s< clusters in English like >Spain<, >sponge<, >speak<, etc. Nevertheless, the Spanish language has no this cluster making it difficult for English learners to pronounce them correctly. The author mentioned only the initial consonant combination >sp< and the difficulties students present pronouncing these words. But it is important to emphasize that within the word-initial >s< clusters there are 8 subtypes: >sk, sl, sm, sn, sp, st, sf, sv<. Kelly affirmed that this phenomenon creates a problem that is the addition of an /e/ sound before >s<. If a Spanish speaker learning English say the phrase >I speak in the street<, his/her pronunciation would be like /aɪ espi:k ɪn ðə estri:t/.

One of the fundamental differences between English and Spanish syllabic structure respecting the complex attack is about the behavior of the consonant /s/ at the beginning of the word. The English >s< can be the initial component of a complex attack presented in terms like >stadium<, >speak<, or >sky< (Canale, 2011). On the other hand, Spanish does not permit complex attacks in word-initial >s< clusters because it generates an extra /e/ vowel sound in the pronunciation of those words (Eddington, 2001). For example, the pronunciation of the word >speak< for a Spanish speaker learning English would be like /espi:k/.

For a native speaker of Spanish, English phonology becomes complex in terms of consonant combinations and production. Canale (2011) mentioned that these Spanish constraints are reflected in the historical development of Latin and the way Spanish assimilates words from different languages. The initial epenthesis in the oral language restructures the syllable to follow the Spanish phonetic restrictions. Therefore, it is expected that a Spanish L1 speaker who acquires English as L2 will include an initial /e/ epenthesis, adapting the syllabic structure of L2 to that of their L1.

Previous phonological studies of /s/+ stop clusters by L1 Spanish- L2 English speakers

Rauber (2002) carried out a research study analyzing the data collected by Rebello (1997) and Carlisle (1991) on the production of word-initial >s< + consonant clusters in English by Spanish and Portuguese speakers. Moreover, the phonological context, structure, and length of this influence were examined for a better analysis. The results of the study showed that a strategy employed by the participants to deal with problems related to syllable structure is the extension of a vowel sound known as “epenthesis” to the initial consonant clusters. The author concluded that this vowel sound can be a result of the association between the universals' linguistics and L1 interference.

In the same way, Orozco (2018) studied the pronunciation of English word-initial >s< cluster by Spanish speaker students from a middle school in Quito, Ecuador. For the research, a qualitative-quantitative method based on previous bibliographic research synthesis was applied. The techniques used for the development of this project were observation, employing a checklist for the participants, and an interview through a questionnaire for the teachers. The results of the study showed that the production of the S-impure cluster by Spanish speakers affects the pronunciation of the English language.

Similarly, a study carried out by Araujo, Marquez de Lucena, and Rocha da Silva (2019) in Brazil described and analyzed the variable process of addition of the epenthetic vowel /e/ in words initiated by consonant groups in the English language. The objective of this research was to identify the frequency of occurrence of insertion of the supporting vowel in the initial position of English words that begin with one of the following groups: >sp<, >st<, >sk<, >sl<, >sm<, >sn< by Brazilian students of English as L2. The research corpus consisted of 18 English students from Paraíba belonging to the basic, intermediate, and advanced proficiency levels. For speech data collection, the reading of twenty-eight sentences and one text in English was recorded.

The results of the study showed that the cluster variables sound, the level of competence, the phonological awareness, and the context that precedes the cluster, are the most relevant for producing the initial vowel epenthesis in cluster >sc<. This contributes to understanding how the learning of English as L2 occurs by Brazilian students, and it promotes the pedagogical implications in the teaching of English as L2. Moreover, knowing the distinctions that are part of the linguistic system, both the mother tongue and the so-called foreign one, is important for better learning of the foreign language, taking into account that the learning process of an L2 occurs consciously.

CHAPTER II. METHODOLOGY

2.1. Research and research approach

The cross-sectional study was conducted online from July to September in 2021 by means of a quasi-experimental design. In addition, Medina, Quintero, and Rodríguez (2013) established that a mixed method combines the qualitative and quantitative approaches providing the best characteristics of each. The qualities of both research approaches, which are relevant and have gained notable contributions to various investigations, carry out observation and evaluation of phenomena. Neither is better than the other. However, the unification of both allows obtaining better results in the investigation. For this reason, this approach was the most optimal for carrying out this research work.

The focus of this research project was qualitative-quantitative or mixed by the instruments used in the process. These instruments were a questionnaire addressed to the participants collecting their qualitative responses regarding their language background since there were monolingual and bilingual groups. It is important to mention that the responses of the qualitative questions were made quantitative by adding some multiple-choice options. On the other hand, the list of sentences with the target point applied to the students made it possible to receive numerical or statistical data in order to adapt them in a transcribed way in this same system. For this reason, the qualitative part was established by the responses made by the participants, and the quantitative part is appreciated by the numerical quantities entered in the results of the examination with the computer program of speech analysis.

The present research attempts to identify language interference to establish the principal characteristics of the investigated community according to what is examined in the project. The focus of this design is linguistic because it seeks to explain, expose or identify the characteristics that emerge in the speech production concerning the population with the investigated problem of this research work. The researcher by collecting data investigates the main issue (epenthesis /e/) in the

pronunciation of the students' target words without interfering at any time in the development of the classes or with the actors who carry out such activity, thus obtaining results and describing them.

This project is a documentary and field research. First, it is a documentary since it was based on prior research works such as research projects, online books, web documents, and theses concerning epenthesis /e/ in words-initial >s< cluster >st, sp, sk<. Second, it is from the field because data collection occurred in a specific place. In other words, this work obtained data from CEDFI private high school in the city of Cuenca, Ecuador in the 2020-2021 school year, which is why it is also a cross-sectional investigation.

Population and sample

The population is the universe of people or things that serve as the object of study to comprehend a particular aspect. On the other hand, the sample is a portion of the universe that serves as the object of study (Lopez, 2004). In addition, the author said that sampling is the system by which the researcher proceeds to choose selected elements, people or objects, that can be probabilistic or non-probabilistic, the latter being the one that uses the criterion of the researcher for the selection of the sample.

The present study was carried out in the private high school CEDFI in Cuenca, Ecuador, where the researcher works and knows the learners' English level. The students have presented this standard error of pronunciation in words-initial /s/ cluster >sp, sk, st< in speaking activities. For example, in conversations, dialogues, roleplays, direct questions, presentations, etc. Once the place of the investigation is defined for the study, and with the approval of the competent authorities of the institution, the selection of the participants for data collection began.

Firstly, all participants of the selected courses for the investigation were asked through an online survey in Mentimeter if they wanted to be part of the research. Moreover, the topic of the project was confidential to them for not alter the results.

The students only knew they would have to read ten sentences with the target words. Fifteen of them, among men and women, wanted to participate voluntarily. However, only six were selected, three men and three women. Since it is a linguistic study where ten sentences for each student are analyzed, the number of six people for the task group is sufficient since it represents 60 words.

The population of this research consists of a task group and a control group. In the task group there are 6 bilingual L1 Spanish - L2 English students of CEDFI high school in the 2020-2021 school period. The students belong to the courses of 1st BGU (General Unified Baccalaureate) classes A and B and 2nd BGU (General Unified Baccalaureate) class B.

Table 1. *Task Group (Bilingual Spanish L1, English L2)*

Course	Men	Women	subtotal
1st BGU class A	0	2	2
1st BGU class B	0	1	1
2nd BGU class A	3	0	3
Total			6

Source: Brito, F. (2021)

On the other hand, in the control group there are 3 monolinguals English L1, and 3 monolinguals Spanish L1 speakers respectively.

Table 2. *Control Group (3 monolinguals English L1 and 3 monolinguals Spanish L1)*

L1	Men	Women	subtotal
English	2	1	3
Spanish	2	1	3
Total			6

Source: Brito, F. (2021)

The bilingual group and the monolingual ones make a total of 12 people, set out in the following table:

Table 3. *Total of Participants*

Task Group	Control Group	Total of participants
6	6	12

Source: Brito, F. (2021)

Reaching this point, it is important to mention that the English and Spanish monolingual groups do not have any knowledge of another foreign language. On the other hand, the bilingual group manifests Spanish as its mother tongue and some knowledge of English as a foreign language, without consciousness of a third language. The bilingual group learned English in a controlled way, that is, as a compulsory subject at the CEDFI school. In addition, during data collection, they were studying the B1 level of English in the 2020-2021 school year.

2.2. Data collection

Techniques and instruments

For the optimal choice of the instruments for data collection, it is fundamental to scrutinize the components of the research, its objectives, its methodology, and the population that is proposed for the development and subsequent study of the research object involved in the project, especially in the bibliography used. In accordance with this approach, the instruments for data collection are a questionnaire to collect linguistic background information from the participants to obtain qualitative information about the problem discussed in this research and a list of sentences with the target words for students to read and obtain statistical data. All this process allowed to expose qualitative and quantitative information for the results of this research.

Data were collected during classes at CEDFI high school in Cuenca, Ecuador in July 2021. It is of paramount importance to mention that the modality of the high school is face-to-face. However, due to the pandemic, classes took place remotely during the application of the instruments. Thus, the information was gathered online through the platform “google meets” because it was the means authorized by the principal of the institution to provide virtual classes to all the students.

The questionnaire is a technique that allows the compilation of the data through a series of questions. Moreover, is the researcher who takes or collects data based on the questions about the topic and objectives of the research. For the linguistic background information, all the participants, the task and control group, completed three different questionnaires with close-ended questions presented as a task in google docs by highlighting their answers. These instruments for data collection will be set out in the following tables.

Table 4. *Questionnaire 1: Participants of the task group, 6 CEDFI B1 students (bilinguals Spanish L1, English L2)*

What is your gender?	Male	Female	
How old are you?	13-14	15-16	17-18
What is your mother tongue?	English	Spanish	Other
What foreign languages do you speak?	English	French	Other
How did you learn English?	Controlled	Uncontrolled	Both
How much English input do you have a week? (Music, movies, classroom situations)	1-5 h/w	5-10 h/w	More that 10 h/w
Where do you speak English?	Classroom	home	Both

Source: Brito, F. (2021)

Table 5. *Questionnaire 2: Participants of the control group, 3 monolinguals English L1*

What is your gender?	Male	Female	
How old are you?	15-18	19-22	More than 23
What is your mother tongue?	English	Spanish	Other
What is your birth place	Ecuador	The United States	Other
Where do you live?	Ecuador	The United States	Both

Source: Brito, F. (2021)

Table 6. *Questionnaire 3: Participants of the control group, 3 monolinguals Spanish L1*

¿Cuál es su género?	Male	Female	
¿Qué edad tiene?	15-18	19-22	More than 23
¿Cuál es su idioma nativo?	English	Spanish	Other
¿Dónde nació?	Ecuador	The United States	Other
¿Dónde vive?	Ecuador	The United States	Both

Source: Brito, F. (2021)

On the other hand, for the elicit speech method, the corpus data was gathered in a semi-spontaneous speech situation. During this procedure, the participants read aloud 10 sentences containing pictures and the target words from a PowerPoint presentation displayed by the teacher in the screen sharing tool of the platform. The target words are those initiated by >s< cluster >sp, st, sk<. In addition, the participants recorded an audio for each of the sentences they read and sent them to the researcher via WhatsApp. Moreover, the students had to make sure that there was no sound in the room, and they repeated the sentences every time they face an interruption.

The following tables show ten sentences in English containing words-initial >s< + cluster >sp, sk, st< for the monolingual and bilingual groups and ten sentences in Spanish with >es-” < beginning for the Spanish speakers group. Each of the sentences contain an image related to them (see *Annexes*).

Table 7. *Task Group (Sentences read by the students of CEDFI high school)*

Number	Sentence
1	Every dead soldier has a face, a story , and a bereaved family
2	It is difficult to persuade people to change their life style
3	The stadium has a seating capacity of 80.000
4	The human skeleton consists of 206 bones

5	It is important to master the 4 English <u>skills</u>
6	She has a serious <u>skin</u> problem
7	He watched a <u>spider</u> spinning its web
8	I would like to visit <u>Spain</u> next year
9	All I want is someone <u>special</u> in my life
10	Sometimes I force my little brother to eat <u>spinach</u>

Source: Brito, F. (2021)

Table 8. *Control group (Sentences read by Spanish speakers)*

Number	Sentence
1	Por comer poco se me encogió el <u>estómago</u>
2	Muchas personas deben cambiar su <u>estilo</u> de vida
3	El <u>estadio</u> de Cuenca tiene una capacidad de 50 mil personas
4	El <u>esqueleto</u> humano tiene 206 huesos
5	La <u>escuela</u> de mi barrio es muy buena
6	La tienda está a la vuelta de la <u>esquina</u>
7	Tengo varios <u>espejos</u> en mi cuarto
8	Me gustaría visitar <u>España</u> el próximo año
9	Lo único que quiero es a alguien <u>especial</u> en mi vida
10	Mi mamá a veces me obliga a comer <u>espinaca</u>

Source: Brito, F. (2021)

Once data collection was completed, the recordings in mp3 format were inserted into the speech analysis software program PRAAT and a spectrogram of every of the audios was created. Then, an analysis of the speech material was conducted. Praat is a continuously updated speech analysis program that offers a practical interface to check the production of speech articulation. With this program, linguists

can listen to words, sentences, or texts of the participants or can download audios from the internet on their own and view them directly in a spectrogram. Styler (2013) mentioned that thanks to the use of colored lines, Praat can calculate the frequency of sounds in Hertz in order to synthesize speech.

Also, using the spectrogram, parameters such as intensity, the duration of the voice, or the melodic curve that provides fundamental information about the position of the syllable in the word can be compared. It is also possible to check the pitch, the high or low frequency of vibrations originated by the tone of voice, at any point in the word or phrase throughout the pitch track.

Illustration 1. Spectrogram 1

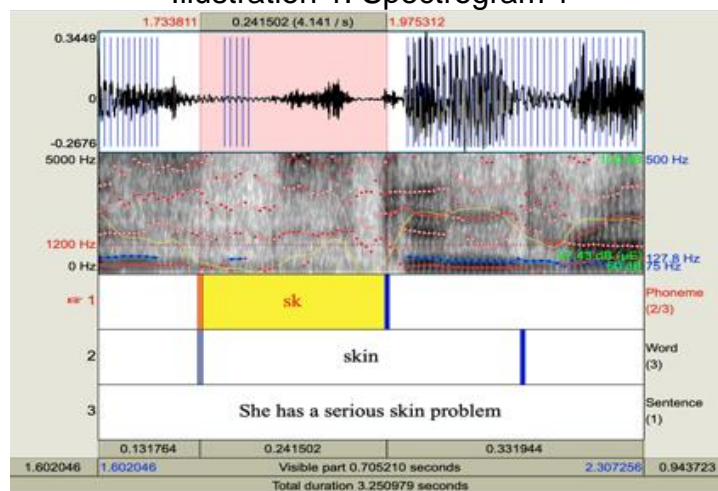
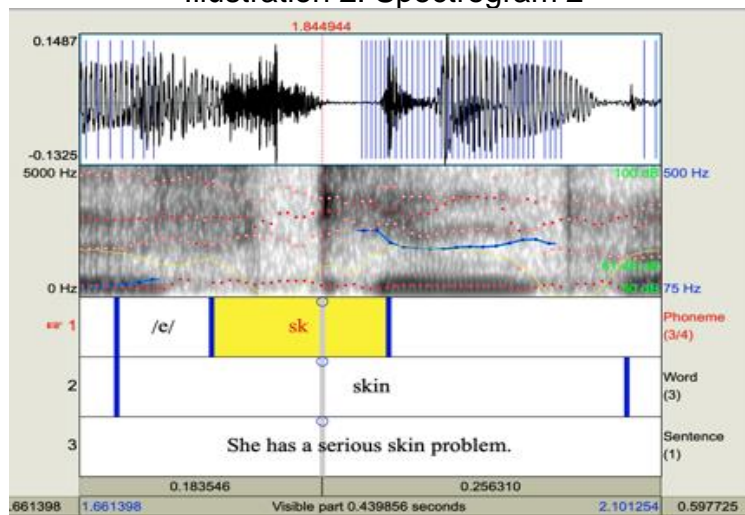


Illustration 2. Spectrogram 2



Two spectrograms with an example of word-initial >s< + cluster >sk< inserted in a sentence read in English by a participant of the monolingual group (L1 English) and a participant of the bilingual test group (L1 Spanish, L2 English) are displayed. The spectrograms illustrate that the participant of the test group adds an /e/ sound before the word >skin< while the L1 English monolingual pronounces it by starting the word phonetically with the unvoiced fricative /s/, followed by a fortis plosive /k/. In addition, you can see if in the word with structure >sk< there has been epenthesis or not. In the spectrogram 2, the lines in the gray part show a clear impact of a /sk/ fortis plosive in the monolingual group, while in the spectrogram 1 from the test group, the occurrence of an /e/ sound is presented.

Furthermore, the recording tool that Praat offers allows to synthesize the voice over and over again, compare the data obtained, and thus establish methods and techniques to improve the phonetic. In addition, the linguist can easily and efficiently schedule phonetic correction lessons from the isolated word to the text or speech. In the same way, Praat allows the incursion of several boxes of graphical annotations under the spectrogram, either to indicate precisions, orthographic transcription, or phonetic transcription.

Validity and reliability

The validity of an instrument is given by its authenticity in the measure of qualities or characteristics that are intended to be studied in an investigation (Guion, 2002). In addition, the author reveals that reliability indicates the precision with a group of test scores and what they tend to measure. In other words, validity and reliability serve to accurately measure the variables that are planted in the research. Consequently, the instruments to be used in this research project, elicit speech method (reading aloud) and questionnaire, will have the validation of the tutor of the research project.

Validator 1: M.A. Melanie Schmidt

Before data collection, the instruments were validated and piloted in the same place the investigation was conducted to verify their reliability. The participants who piloted

the instruments in English were students of the same English level and from the same classes as the task group. On the other hand, the participants who piloted the instruments in Spanish were people who did not have any knowledge of English or any other foreign language. The validation of the instruments took about a week from its application to its approval by the research tutor. During that week, some changes were made regarding question structures to obtain the linguistic background of the participants.

In addition, the foreign languages spoken by the students of the institution were considered before data collection because it was necessary to know up to what extent the results of those instruments may be affected. In the same way, the tutor of the project recommended reducing the number of questions of each instrument to collect only relevant data for the study. Finally, the words-initial /s/ clusters of the sentences used for the reading aloud method were changed into B1 level words since these from the beginning were taken at random without considering the levels of each one. In this way, the validation process of the instruments was concluded to give way to their application for research.

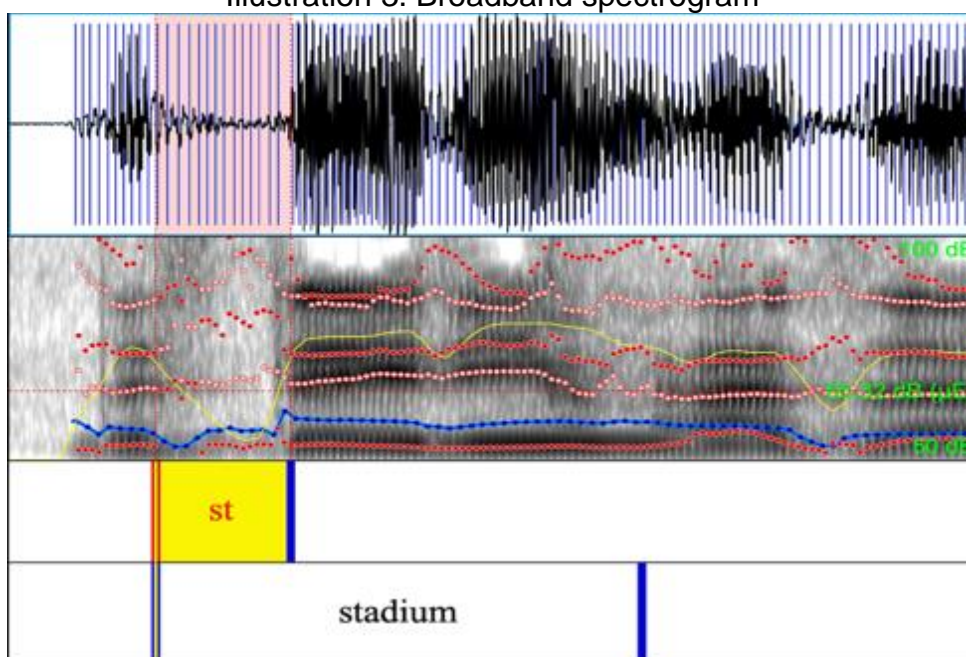
Processing and analysis of information

The present investigation requires a linguistic voice analysis program that examines the sounds of the words. The type of audio that has to be uploaded to the voice processor was analyzed since it only accepts specific formats. Before processing and analyzing the data obtained from the elicited speech method "reading aloud" in Praat, some tests were carried out to verify that the program can analyze mp3 formats. In the program, audios obtained from the web, recordings, and voice messages were uploaded to determine its functionality with different sources.

Spectrograms

A spectrogram is the graphical representation of the acoustic properties of speech sounds where frequency (Hz) is present on the ordinate, time on the abscissa, and intensity in grayscale (Correa Duarte, 2014). To see a spectrogram, it is necessary to have a sound in the object's window (Praat Objects). Praat shows by default a broadband spectrogram similar to the one exhibited in *Illustration 3*. Before performing any analysis, it is necessary to adjust the parameters according to the speaker's characteristics who produced the sample.

Illustration 3. Broadband spectrogram



Phonetic transcription

According to Correa (2014) a phonetic transcription consists of a representation of the articulatory and acoustic properties of speech sounds through written symbols. In addition, labeling is a complementary task in which marks are assigned to certain variables to determine their frequency of occurrence, the magnitude of their correlations, and to carry out measurements and calculations automatically. More than just a technique of the profession, the transcription, and labeling of phonetic data must be cultivated with experience. Therefore, they are not learned directly

from a book. In the right part of the speech analysis program, there are the phonetic symbols used for the transcription of the target words.

More explicitly, the criterion used in this analysis for this segmentation stage was to guarantee the equilibrium of the parameters. During a few tens of milliseconds of sound articulation, the formants remain very stable, and with them the bandwidths. In this way, you can identify the sounds separately. It is important to mention that while analyzing a signal from a linguistic point of view, the first problem faced is figuring out how to divide continuous waves into categories like consonants and vowels. The spectrogram is not very helpful as a first approach since the representation of acoustic changes does not always show clear boundaries between the sounds of a language. The oscillogram is worthwhile because it represents the amplitude of the articulatory gestures and the frequency variations.

2.3. Research proposal

The overextension of L1 Spanish speech patterns by bilingual L2 English high school students

General information

Location of execution: Unidad Educativa Particular "CEDFI"

Province: Azuay

City: Cuenca

Address: Misicata

Area: English as a foreign language

Introduction

There is no doubt about the fact that in second language acquisition (L2) the mother tongue (L1) of a learner has always had an extensive impact on the L2 learner's behavior due to the existence of interlingual correlations. It can be observed that L2 learners transfer phonological patterns, word meanings, grammatical structures, and even cultural expressions from L1 to L2. As a result, L2 learners might be exposed to language barriers throughout the learning process that could influence the comprehension and production of phonological or other linguistic features. The main purpose of this research is to detect, analyze and consequently avoid phonological transfer interferences by L1 Spanish students at B1 level of English (L2) at CEDFI high school. The object of the investigation is the speech production of L2 English words that start with a consonant /s/ sound.

The cross-sectional study will be conducted online from April to July in 2021 by means of a quasi-experimental design. The corpus data will be gathered in a semi-spontaneous speech situation. In total, there will be one bilingual test group (L1 Spanish, L2 English) consisting of six students as well as two monolingual control groups (L1 Spanish, L1 English) consisting of three participants each. The investigation approach will be qualitative and quantitative. Once the data recordings are completed, an analysis of the speech material will be conducted via the speech analysis software program PRAAT. An overextended adding of the vowel /e/ sound in English words that start with consonant /s/ is expected by the bilingual test group.

The subject of investigation and the research question

On a worldwide scale, linguistics specialized in language acquisition have investigated the influence and transfer processes of L1 in L2 learning. Moreover, this field of research has gained tremendous importance in foreign language teaching because it is considered to be one of the major causes for lack of success in L2 acquisition. Especially phonological L1 interferences are a common issue for

most L2 learners all over the world which can also be observed among students of various levels of English at CEDFI high school.

The overuse of certain L1 speech patterns in L2 English by the test group of this research might be a result from the imitation of the non-native English input by Ecuadorian English teachers for years. Another problem in the study could be that students feel exposed to an unnatural speech situation where nervousness and dissimulation must be avoided in order to not falsify the speech data. By not explaining explicitly the study's main focus to the test group, an artificial dissimulation of the student's pronunciation will be tried to be excluded.

Objectives

General Objective

To analyze phonological interferences in L2 English speech production by L1 Spanish students:

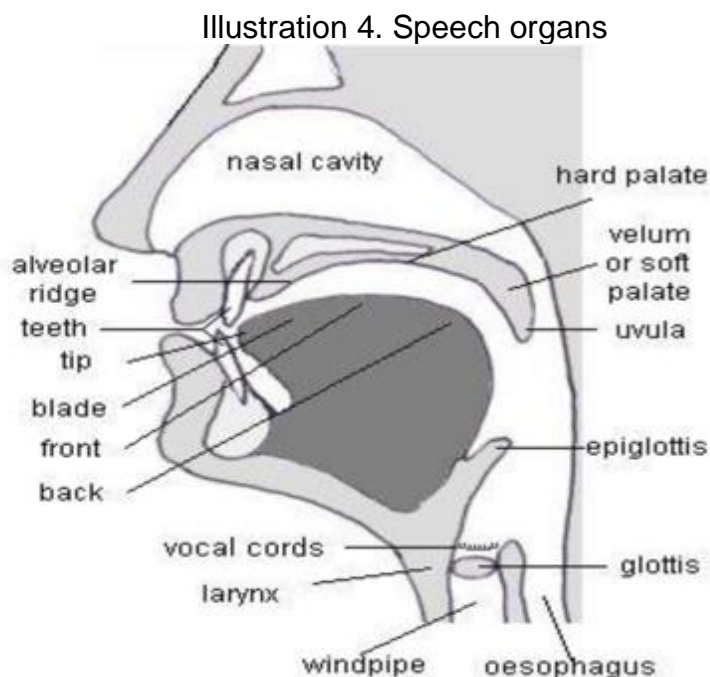
Specific Objectives: 1. Related to the State of Art and Practice (Theoretical). 2. Methodological relation to the diagnosis. 3. Methodological relation to the Proposal. 4. With relation to the Practical Result.

1. To analyze L2 English speech production focusing on L1 interferences.
2. To detect and identify the overextension of L1 sound patterns in L2 English.
3. To investigate strategies that can avoid L1 interferences.
4. To share and reflect on the results within the educational community.

The overextension of L1 Spanish speech patterns by bilingual L2 English high school students (Epenthesis /e/ in words-initial >s< cluster).

Articulation of sounds

When a person speaks, he emits different sounds in the speech production. However, these sounds have various articulations depending on the phonological context and the spoken language. The movements of the speech organs (vocal cords, teeth, alveolar ridge, palate, uvula, tongue, glottis, windpipe, larynx, and oral and nasal pharynx) slightly transform the shape and distance of the oral cavity when speaking. This act causes the air that passes through this cavity to generate very different sounds depending on the movements produced in the mouth. This particular procedure that seems to be difficult is called sound articulation (Abad & Argudo, 2009).



Source: (Abad & Argudo, 2009)

The authors stated that the speech apparatus consists of two main cavities to produce oral and nasal sounds. Moreover, they assumed that without an airstream generated from the lungs, speech is not possible (Abad & Argudo, 2009). In the previous illustrations, the most significant speech organs consisting of articulators and place of articulations are detailed. Spanish and English are two languages

where these speech organs work in foreign ways. As a result, a transfer from the L1 to the L2 is possible.

Transfer from the L1 to the L2

The /e/ epenthesis effect is common in words-initial >s< cluster and generates more confusion for Spanish L1 students learning English. Lekova (2010) explained that pronunciation problems occasionally are the result of the process of adjusting a foreign word into the mother's dialect. During this process, the system of the first language intends to adapt to the second one, thus generating an erroneous production of specific phonemes. As a result of this adaptation process, Spanish L1 learners produce English L2 words with characteristics of their mother tongue, such as the epenthesis /e/ in words-initial >s< cluster.



Besides, there are some examples of words from different languages. For instance, from the Latin language are given “*scabrous*” ‘scandalous’, and “*scala*” ‘ladder’ from the Italian “*svelte*” ‘elegant’ and “*sbirro*” ‘cop’ and English “scanner” and “stress” as a result, some adaptations emerged to Spanish and were accepted by the Royal Academy of the Language (R.A.E.), “rugged”, “scale”, “slender”, “henchman”, “scanner”, and “stress”. The process to follow is that when using a word very recurrently in L1, the said word is transformed into a metaplasm (transformation in diction), and this fact, in turn, generates a newly coined word.





On the other hand, Hostetler (2013) mentioned that certain norms are not applied regularly to some words because each word has its own story that can change over time. So, by ignoring these rules, the primary language will interfere with learning SL, resulting in certain types of linguistic interference. In the case of Spanish as L1 and English as L2, one of the most relevant points to deal with, as in this investigative work, is the overextension of L1 Spanish speech patterns by bilinguals L2 English students. For example, the epenthesis /e/ in words-initial >s< cluster >sp, st, sk<. The L1 Spanish speaker transfers this vowel sound to these words because the Spanish language lacks these terminologies since as mentioned before, the rules are only written and are not applicable.





Procedure

For the study of epenthesis /e/ in words-initial >s< cluster >sp, sk, st<, all the lexical items that show this characteristic were counted. As a result, there were 120 occurrences in the speech production of the participants (see tables 9 and 10). Then the lexical items were classified according to the consonant that proceeds to >s< to see if there are percentage differences in the use of epenthesis according to the clusters >sp, sk, st<. What is more, double consonant structures like >sc< were not taken into account, such as the combination “the school”. Also, the absence of a pause in the aforementioned contexts can make analysis difficult. For this reason, structures of this type were taken into consideration only in the contexts in which a pause is perceived between both lexical pieces. For example (the-school), which makes it possible to discriminate if there is indeed an epenthesis.

Table 9. Sentences read by 6 bilinguals Spanish L1, English L2 and 3 monolinguals English L1. (90 speech productions)

Words-initial >s< cluster >st, sp, sk<		
Consonant cluster	Word	Sentence
St-	<u>Story</u>	<p>Every dead soldier has a face, a story, and a bereaved family</p> 
	<u>Stadium</u>	<p>The stadium has a seating capacity of 80.000</p> 





		<p>It is difficult to persuade people to change their life style</p> 
Sp-	<u>Style</u>	<p>I would like to visit Spain next year</p> 
	<u>Spain</u>	<p>All I want is someone special in my life</p> 
	<u>Special</u>	<p>He watched a spider spinning its web</p> 
	<u>Spider</u>	

	<u>Spinach</u>	<p>Sometimes I force my little brother to eat spinach</p> 
Sk-	<u>Skills</u>	<p>It is important to master the 4 English skills</p> 
	<u>Skeleton</u>	<p>The human skeleton consists of 206 bones</p> 
	<u>Skin</u>	<p>She has a serious skin problem</p> 



Source: Brito, F. (2021)

Table 10. Sentences read by 3 monolinguals Spanish L1. (30 speech productions)

	Words-initial >s< cluster >st, sp, sk<
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Consonant cluster	Word	Sentence
Est-	<u>Estómago</u>	<p data-bbox="778 331 1362 412">Por comer poco se me encogió el estómago</p> 
	<u>Estilo</u>	<p data-bbox="778 689 1362 770">Muchas personas deben cambiar su estilo de vida</p> 
	<u>Estadio</u>	<p data-bbox="788 1106 1356 1187">El estadio de Cuenca tiene una capacidad de 50 mil personas</p> 
	<u>Espejos</u>	<p data-bbox="788 1480 1356 1561">Tengo varios espejos en mi cuarto</p> 

Esp-	<u>Especial</u>	<p>Lo único que quiero es a alguien especial en mi vida</p> 
	<u>España</u>	<p>Me gustaría visitar España el próximo año</p> 
	<u>Espinaca</u>	<p>Mi mamá a veces me obliga a comer espinaca</p> 
	<u>Escuela</u>	<p>La escuela de mi barrio es muy buena</p> 

Esqu-	<u>Esqueleto</u>	<p data-bbox="798 264 1345 349">El esqueleto humano tiene 206 huesos</p> 
	<u>Esquina</u>	<p data-bbox="798 674 1345 759">La tienda está a la vuelta de la esquina</p> 

Source: Brito, F. (2021)

Epenthesis /e/

In this step, the sentences were inserted into the voice analysis program PRAAT. The target word is divided to obtain the segments of interest (epenthesis /e/) and thus continue with the methodology used. This procedure is accomplished by adding blue markers at the "end points" or "cut-points" in the system of PRAAT. The purpose of this step is to separate the target sound from the rest of the phonemes, see *illustration 5*. Once the objective is set, the vowel segments characterize the voice indicating the location of the endpoints. Moreover, these segments are appreciated by the resonances of the speech apparatus's cavities shown in the periodic appearance of the waveform displayed in the upper window in the PRAAT interface as shown in *illustration 6*. In addition, all spectrograms of the study are found in the *Annex 4*.

Illustration 5. Segmentation

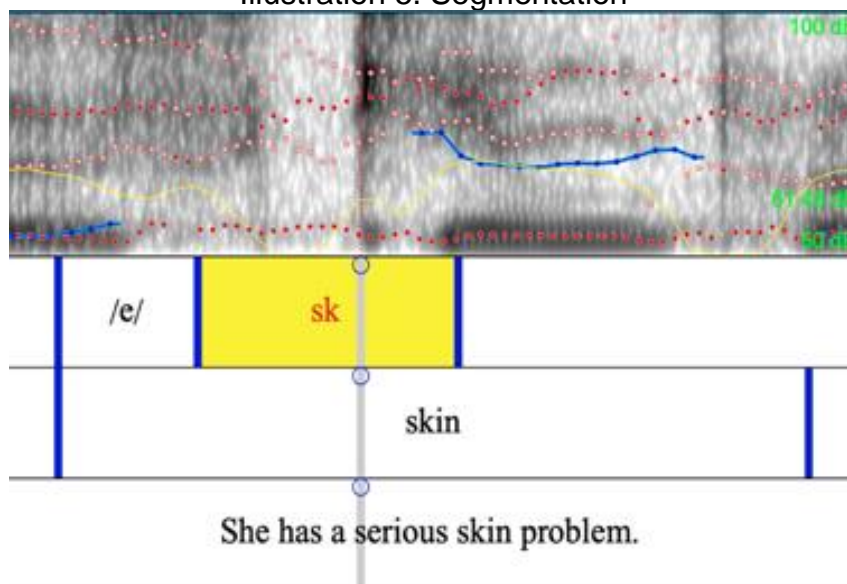
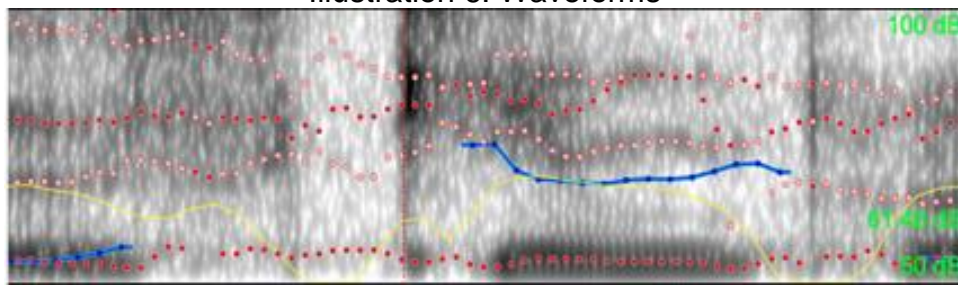


Illustration 6. Waveforms



CHAPTER III. ANALYSIS OF THE RESULTS OF THE RESEARCH

3.1. Analysis of the results

The task and control group participants did not receive any explanation about the topic of the project before applying the instrument. They had to read the sentences most naturally and fluently possible at the moment of the instrument application. However, at the end of the application, the researcher proceeded to explain the topic of the work. It was precisely here when the students, who served as the object of study, noticed the word-initial >s< and their incorrect pronunciation of the words. Therefore, they read 10 sentences prepared in advance by the researcher, and their voices were recorded in audios, with the sole purpose of helping to establish the statistics for the present investigative work.

Table 11. *Participant 1, task group (Bilingual Spanish L1, English L2)*

Participant	Gender	Is there an overextension of /e/ sound?	Number of words	Percentage
# 1	Female	Yes	9	90%
		No	1	10%
Total			10	100%

Source: Brito, F. (2021)

From the universe of students that served as the object of study, it is obtained that 90% of the words pronounced by student # 1 have a vowel sound extension /e/ at the beginning, while only 10 % of them do not present this phenomenon. Moreover, it can be clearly stated in this item that the vast majority of word-initial >s< + stop clusters in English spoken by the student have an extra vowel phoneme at the beginning of the word. This incident confirms that there is a wrong pronunciation in most English words even when the students have a higher level of English. This phenomenon also indicates that the extra sound occurs because there are no words-initial >s< in Spanish, instead, there are words with >es< at the beginning like

“*estadio*” ‘stadium’. As a result, a prosthetic /e/ sound is implemented at the beginning. For example, an /e/ sound appeared before the >s< in the word >story< and the result when pronouncing is /'estɔ:.ri/ instead of /'stɔ:.ri/.

Table 12. *Participant 2, task group (Bilingual Spanish L1, English L2)*

Participant	Gender	Is there an overextension of /e/ sound?	Number of words	Percentage
# 2	Female	Yes	10	100%
		No	0	0%
Total			10	100%

Source: Brito, F. (2021)

Unlike the previous item, in this case, 100% of the English words-initial /s/ are produced with the / e / sound at the beginning. On the other hand, 0% of the words do not present this phenomenon. Once again, the presence of an epenthesis /e/ in English word-initial >s< produced by Spanish-speaking students is repeated in this paragraph. In other words, a new syllable is automatically generated when the participant, pronouncing word-initial >s< cluster, makes use of epenthesis in these words. There is an addition of a phoneme /e/, in this case, at the beginning of the English words. For instance, in the word >skeleton< with its phonetic transcription /'skel.ə.tən/, it would form this new phonetic transcription with E-prosthetics /'eskel.ə.tən/, acquiring a new syllable.

Table 13. *Participant 3, task group (Bilingual Spanish L1, English L2)*

Participant	Gender	Is there an overextension of /e/ sound?	Number of words	Percentage
# 3	Female	Yes	9	90%
		No	1	10%
Total			10	100%

Source: Brito, F. (2021)

As in the first item, the same results are obtained. Here, 90% of students generate an /e/ sound in English word-initial >s< cluster, and only 10% do not present this issue in the pronunciation of the word. This is regarding the addition of the /e/ phoneme. As student # 1, the sound of an extra /e/ in the English word-initial >s< is repeated in this section. When the student pronounces the words beginning with >s<, she makes use of epenthesis once more. When inserting a phoneme /e/, the student automatically generates a new syllable. We provide as an example one of the words that are affected by this phenomenon and one that is not.

Table 14. *Participant 4, task group (Bilingual Spanish L1, English L2)*

Participant	Gender	Is there an overextension of /e/ sound?	Number of words	Percentage
# 4	Male	Yes	2	20%
		No	8	80%
Total			10	100%

Source: Brito, F. (2021)

In this case, the results show a big difference from students 1, 2, and 3. Only 20% of the words produced by participant #4 present a vowel sound before the >s<, and 80% do not indicate this phenomenon. The student, in this case, does not have much difficulty pronouncing most of the English words-initial /s/ cluster of the study. At this moment, an extra phoneme is evident in the words >stadium< and >skeleton< produced by student # 4. On the other hand, the mispronounced words are story, skills, spider, spinach, special, Spain, skills, and style. Here, the pronunciation of most English words-initial >s< is correct and there is no production of the /e/ sound. The student might have previously carried out audio-linguistic exercises, which help him perform better in their diction regarding the pronunciation of word-initial >s< cluster in English.

Table 15. *Participant 5, task group (Bilingual Spanish L1, English L2)*

Participant	Gender	Is there an overextension of /e/ sound?	Number of words	Percentage
# 5	Male	Yes	6	60%
		No	4	40%
Total			10	100%

Source: Brito, F. (2021)

This table indicates a slight variation of the results among the pronunciation of the words-initial >s< where 60% of them use the extra phoneme /e/ and 40% of the words do not. It is clearly shown that the student has no problem pronouncing half of the words presented. Again most of the words-initial >s< cluster indicates a phoneme /e/ thus originating a bi-syllabism in them, for example: The words >stadium< as /'esteɪ.di.əm/, >skeleton< as /'eskel. ə.tən/, >skin< as /eskiːn/, >spider< as /'espaɪ.dər/, >Spain< as /espeɪn/, and >special< as /espeʃ.əl/. Undoubtedly this occurs because the participants make use of the /e/ to facilitate the pronunciation of these terms by putting the said vowel sound in before the >s<. The words that do not present this issue are >spinach<, >story<, >style<, and >skills<.

Table 16. *Participant 6, task group (Bilingual Spanish L1, English L2)*

Participant	Gender	Is there an overextension of /e/ sound?	Number of words	Percentage
# 6	Male	Yes	5	50%
		No	5	50%
Total			10	100%

Source: Brito, F. (2021)

It is obtained that half of the words-initial >s< plus cluster have the phoneme /e/ at the beginning. In this way, 50% of the words produced by student # 6 present this

phenomenon, and the other 50% do not. The extension of the /e/ sound is evident in the words >story< as /'estɔ:ri/, >stadium< as /'esteɪ.di.əm/, /, >skin< as /eskɪn /, >spider< as /'espaɪ.dər/, and >special< as /,espeʃ.əl/. In the same way, this phenomenon shows that the phoneme appears because some words in Spanish that begin with >es< are represented in English with >s<, as is the case of “*especial*” ‘special’, or “*estadio*” ‘stadium’.

Control Group (Monolingual English L1)

Table 17. *Participant 1, control group (Monolingual English L1)*

Participant	Gender	Is there an overextension of /e/ sound?	Number of words	Percentage
# 1	Male	Yes	0	0%
		No	10	100%
Total			10	100%

Source: Brito, F. (2021)

It is shown that all the words produced by the participant do not include an extra phoneme before the words-initial >s< cluster. 100% of the words were pronounced with the /s/ at the beginning without any vowel sound. The participant does not originate a bi-syllabism because his pronunciation is natural as a native speaker of English. In addition, he did not make use of the extra phoneme /e/ because he does not need to facilitate the production of these terms, unlike a Spanish speaker. Moreover, having no knowledge of Spanish, the participant is not influenced to include a phoneme, which according to this study, is a common characteristic in Spanish speakers learning English.

Table 18. *Participant 2, control group (Monolingual English L1)*

Participant	Gender	Is there an overextension of /e/ sound?	Number of words	Percentage
-------------	--------	---	-----------------	------------

# 2	Male	Yes	0	0%
		No	10	100%
		Total	10	100%

Source: Brito, F. (2021)

Same as the previous case, 100% of the words spoken by participant # 2 did not show an /e/ sound. The same results are repeated for the absence of a vowel sound in the words-initial >s< cluster produced by a native English speaker.

Table 19. *Participant 3, control group (Monolingual English L1)*

Participant	Gender	Is there an overextension of /e/ sound?	Number of words	Percentage
# 3	Female	Yes	0	0%
		No	10	100%
		Total	10	100%

Source: Brito, F. (2021)

Once again it is shown that there is no extra sound in the pronunciation of words-initial >s< cluster, since 100% of the words spoken by participant # 3 lack this phoneme. The absence of extra phonemes in the words-initial >s< cluster is confirmed once again.

Control Group (Monolingual Spanish L1)

In the following group, the students carried out the same task as the previous groups. But, in this case, they read sentences in Spanish that contained words that start with >es< since these, in most cases, are the equivalent to English words-initial >s< like “*estómago*” ‘stomach’. These words begin with the phoneme /e/ followed by /s/ in Spanish. However, their English translation omits the /e/. These terms are

used to compare the starting phoneme sound with the English words-initial >s< produced by native Spanish speakers learning English.

Table 20. *Participants, monolinguals Spanish L1 control group*

Participant	Gender	Is there an /e/ sound?	Number of words	Percentage
# 4	Male	Yes	10	100%
		No	0	0%
		Total	10	100%
# 5	Female	Yes	10	100%
		No	0	0%
		Total	10	100%
# 6	Male	Yes	10	100%
		No	0	0%
		Total	10	100%

Source: Brito, F. (2021)

Spanish is a language whose spelling-sound correspondence is direct, that is why 100% of the words present the phoneme /e/ at the beginning. Spanish does not have words initiated by >st sp sk<, because Spanish phonotactics does not allow these structures due to the onset-nucleus and coda structure of its syllables. Also, it develops a supportive vowel element adapted to its language. For this reason, for a native of Spanish, the phonology of English presents a degree of complexity in phonological and articulatory terms. All the words of this group are produced by Spanish speakers who do not have any knowledge of the English language, that is why they do not present an omission of the /e/ sound in the words.

3.2. Discussion

Based on the problem statement, the objectives of this project, the bibliography, and the results obtained, it is confirmed that there is an inaccuracy in the pronunciation of English words-initial >st sp sk< produced by the students of CEDFI high school who served as the object of study concerning the English language. In the same way, there is a phonetic transposition of the L1 in the L2. An interference is established in the message provided by the students. Thus, for example, as indicated by the results collected, the vast majority of students manifest deficiencies in their articulation, especially in the oral production of word-initial /s/ cluster, which promotes certain struggles of understanding, not among Spanish speakers but Spanish L2 English and English speakers.

On the other hand, if the students do not acquire proper pronunciation of English words-initial >s<, it is evident that there could be some conflicts regarding the learning of English. In other words, when students are doing dialogues, role plays, or group conversations in class, the same error would continue to be promoted and transmitted to other students. This project indicates that the students currently need to develop a better pronunciation in the L2 because they are not making correct use of English words-initial >s< cluster. As previously explained by previous studies, this problem is because L1 is rooted in the mind of the learners, thus creating a transfer to L2 and incorrect communication between speakers.

However, the results exposed in this project can also serve other researchers to take the lead and make certain improvements in pronunciation and thus gradually develop a better oral production of EFL.

CONCLUSIONS

The analysis of this research project presents a set of conclusions based on the objectives of this work, which will be detailed below.

- L2 English Speech production by Spanish L1 learners resulted in a common mother tongue interference. When the students have their native language structure adhered in their minds and attempt to learn a new language, that part of their mother tongue that is rooted generates interference between the two languages. As a result, it will cause a conflict in the L2 especially with the communication with a native speaker of English.
- Concerning words-initial >s< cluster, the words that begin with >sk, st, sp< or >s< + other consonant combinations are the most common in English which do not exist in standard Spanish because words do always start with the vowel letter >e<, Spanish “*estudiante*” ‘student’. Therefore, the addition of the phoneme /e/ before the clusters by Spanish speakers learning English is more common. As a result, inconveniences or affectations are generated in the pronunciation and communication, especially in interventions with natural users of English.
- Regarding the specific case of English words-initial >s< cluster and its pronunciation by native Spanish speakers learning English, some linguistic characteristics such as the production of a bi-syllabism, null acquisition of foreign sounds, intrusion of the phoneme / e / at the beginning of an English word-initial >s<, and finally unclear communication in L2 are obtained. In other words, the student either pronounces the /s/ at the beginning of the words in English well or directly pronounces the phoneme /e/ well as if they were Spanish words, the latter being the most frequent. All this event simply ends in an epenthesis. For example, pronouncing >stadium< as /'esteɪ.di.əm/ and not as /'steɪ.di.əm/.

- Respecting the aforementioned, the students generate a bi-syllabism when making use of an /e/ sound. In other words, the act of introducing the sound /e/ in words-initial >s< means the increase of an extra syllable in those words. For example, if the word >space<, /speɪs/, which is a one-syllable word, is pronounced with the /e/ at the beginning, it becomes a two-syllable word, /es'peɪs/. This is due to the erroneous addition of the Spanish /e/ sound before >s< in English words. This process is the result of facilitating the pronunciation of foreign words by L2 learners.
- To sum up, one of the ways learners transfer phonetic components from the mother tongue to the English language is precisely through the pronunciation of the English words-initial >s< cluster. When the student adds the phoneme /e/ in these words, he directly creates interference because the proper pronunciation is through the phoneme /s/ instead of the epenthesis.

RECOMMENDATIONS

Here are some recommendations that can be used by teachers and students for a more accurate pronunciation of English words-initial /s/ cluster.

- It is suggested to inform English language learners that languages have many sounds that are not part of their mother tongue. Therefore, they will be likely to make a series of mistakes in their pronunciation, which at the beginning is normal. However, as they acquire certain phonological abilities, learners must also be able to articulate unfamiliar sounds, such as words-initial >s< cluster, to evade possible communication difficulties or impairments in the acquisition of L2.
 - Another relevant issue is that the instructor has to guide students in the language classroom to produce the /s/ in words-initial /s/ cluster properly to avoid the intervention of the /e/ sound because these words, which are difficult to articulate, do not exist in the L1. By making use of the /e/ phoneme to help pronunciation, the students would be producing at the same time a very notorious bi-syllabism, a phenomenon that obstructs a more fluent conversation. On the other hand, the production and reception of sounds that students are not used to is recommended in speaking and pronunciation practice to achieve better production.
 - Finally, it is recommended for teachers to guide students by pronouncing the investigated words correctly. As a result, they can avoid a possible overextension of the epenthesis /e/. In this way, they also acquire good pronunciation without interference. This can help students master a more accurate oral production of English words-initial /s/ + cluster.
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ANNEXES

Annex 1. Sentences for data collection (Monolinguals English L1 and bilinguals Spanish L1, English L2)




Words-initial >s< cluster >st, sp, sk<	
St-	<p>Every dead soldier has a face, a story, and a bereaved family</p> 
	<p>The stadium has a seating capacity of 80.000</p> 
	<p>It is difficult to persuade people to change their life style</p> 

Sp-	<p>I would like to visit Spain next year</p> 
	<p>All I want is someone special in my life</p> 
	<p>He watched a spider spinning its web</p> 
	<p>Sometimes I force my little brother to eat spinach</p> 



	<p data-bbox="638 253 1241 338">It is important to master the 4 English skills</p>  <p>The diagram shows four circular icons arranged in a square, connected by arrows in a clockwise cycle. The top icon is blue with an ear and the word 'LISTENING'. The right icon is pink with a mouth and the word 'SPEAKING'. The bottom icon is blue with an eye and the word 'READING'. The left icon is pink with a pen and the word 'WRITING'.</p>
<p data-bbox="327 813 379 846">Sk-</p>	<p data-bbox="638 667 1241 752">The human skeleton consists of 206 bones</p>  <p>A black and white line drawing of a human skeleton, showing the skull, spine, ribs, and limbs.</p>
	<p data-bbox="638 1081 1241 1167">She has a serious skin problem</p>  <p>A photograph of a woman with a serious expression, holding her hands to her face, suggesting a skin issue.</p>

Annex 2. Sentences for data collection (Bilingual Spanish L1)

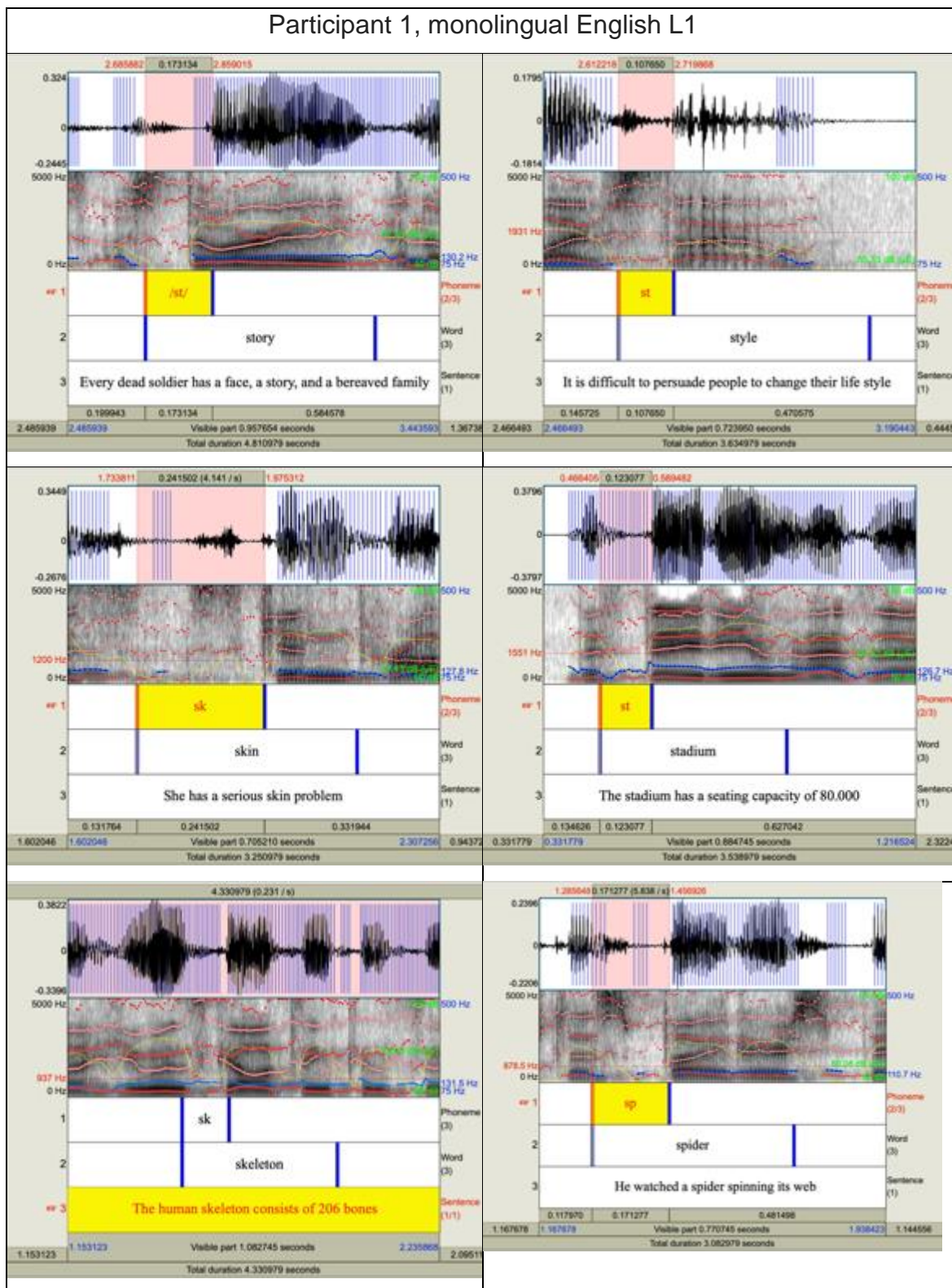
Words-initial >s< cluster >st, sp, sk<

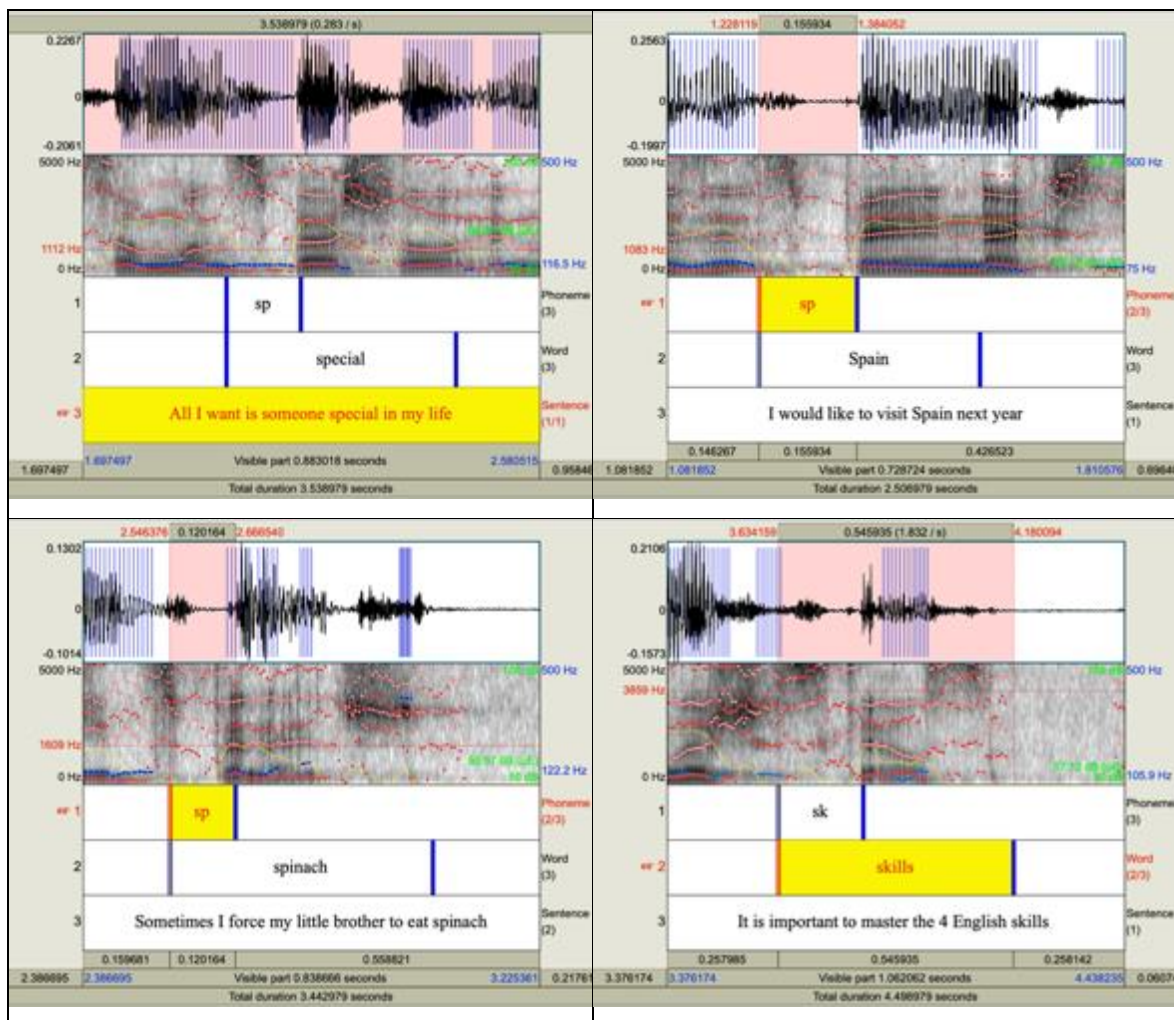
	<p>Por comer poco se me encogió el estómago</p> 
Est-	<p>Muchas personas deben cambiar su estilo de vida</p> 
	<p>El estadio de Cuenca tiene una capacidad de 50 mil personas</p> 
	<p>Tengo varios espejos en mi cuarto</p> 

Esp-	<p data-bbox="667 264 1225 347">Lo único que quiero es a alguien especial en mi vida</p> 
	<p data-bbox="667 674 1225 757">Me gustaría visitar España el próximo año</p> 
	<p data-bbox="671 1084 1220 1167">Mi mamá a veces me obliga a comer espinaca</p> 
	<p data-bbox="671 1494 1220 1576">La escuela de mi barrio es muy buena</p> 

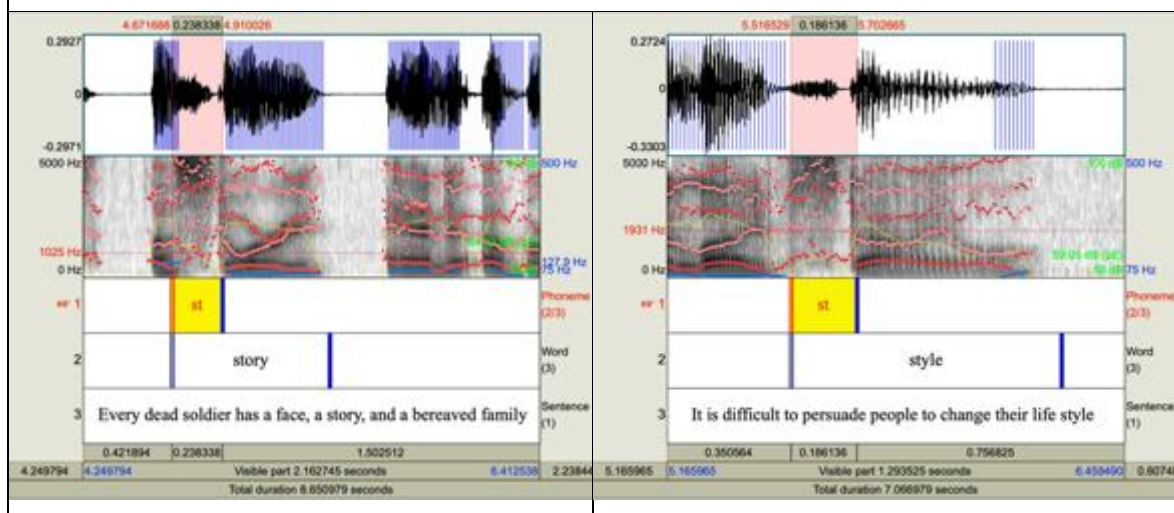
<p>Esqu-</p>	<p>El esqueleto humano tiene 206 huesos</p> 
	<p>La tienda está a la vuelta de la esquina</p> 

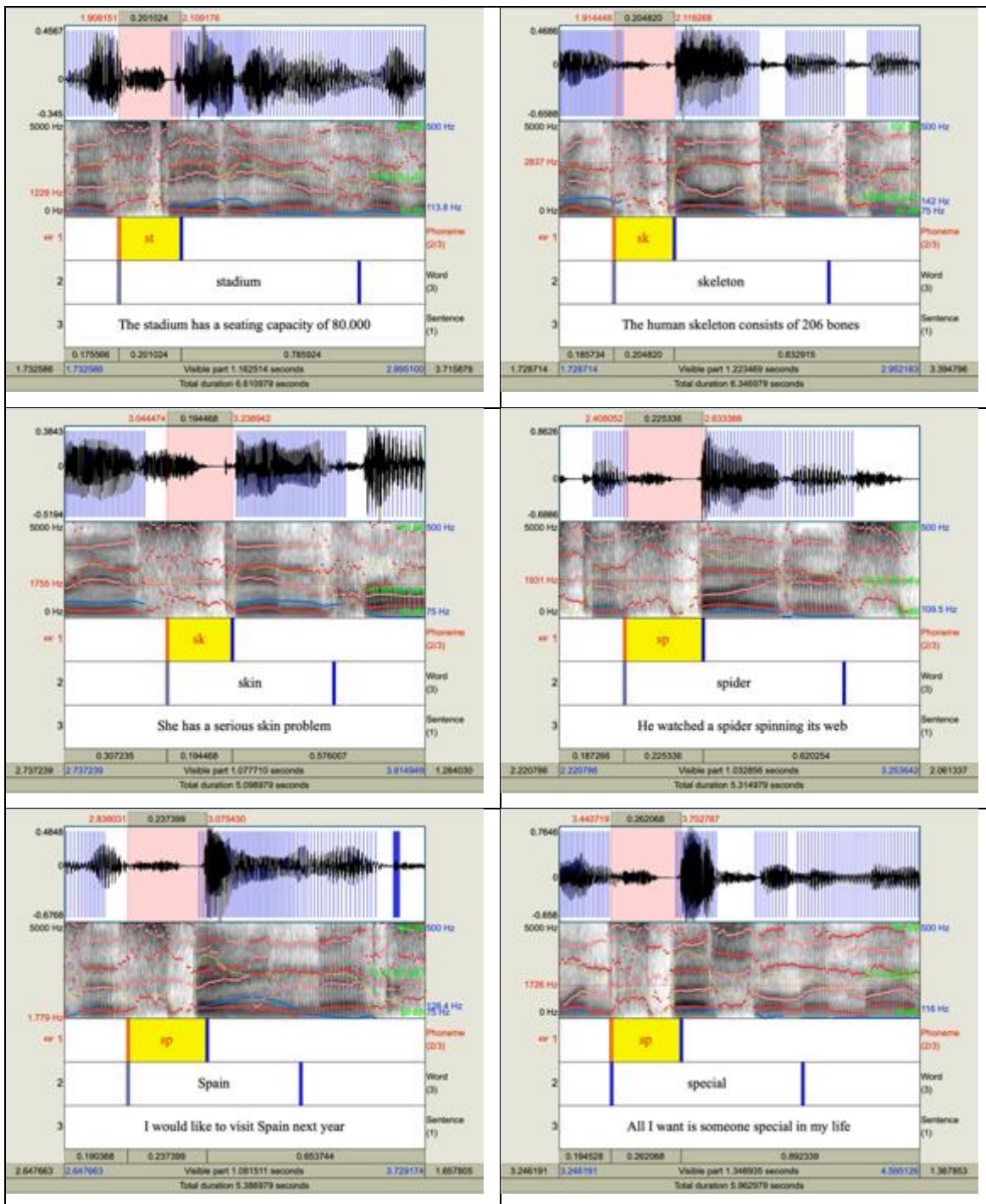
Annex 3. Spectrograms of the control group (Monolinguals English L1)

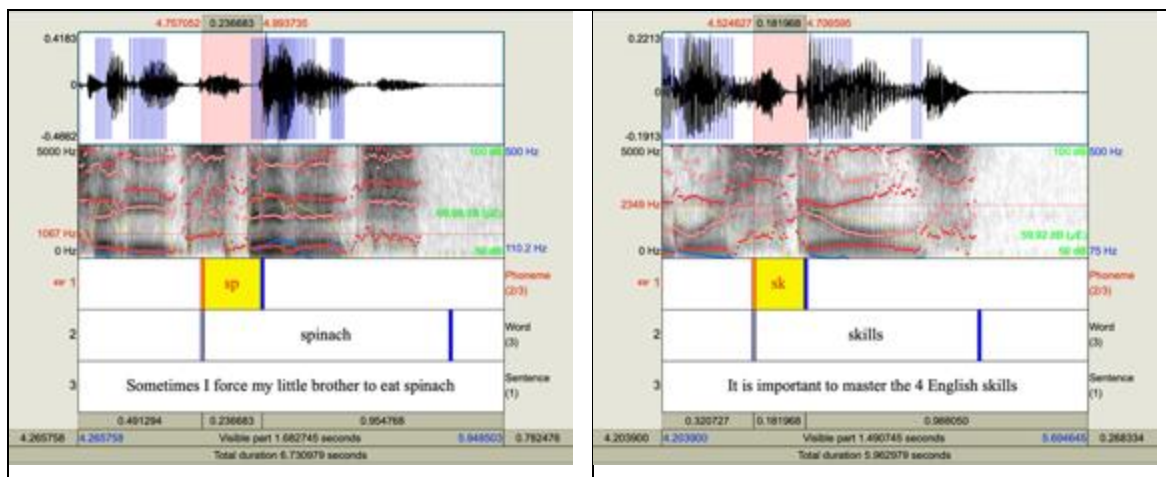




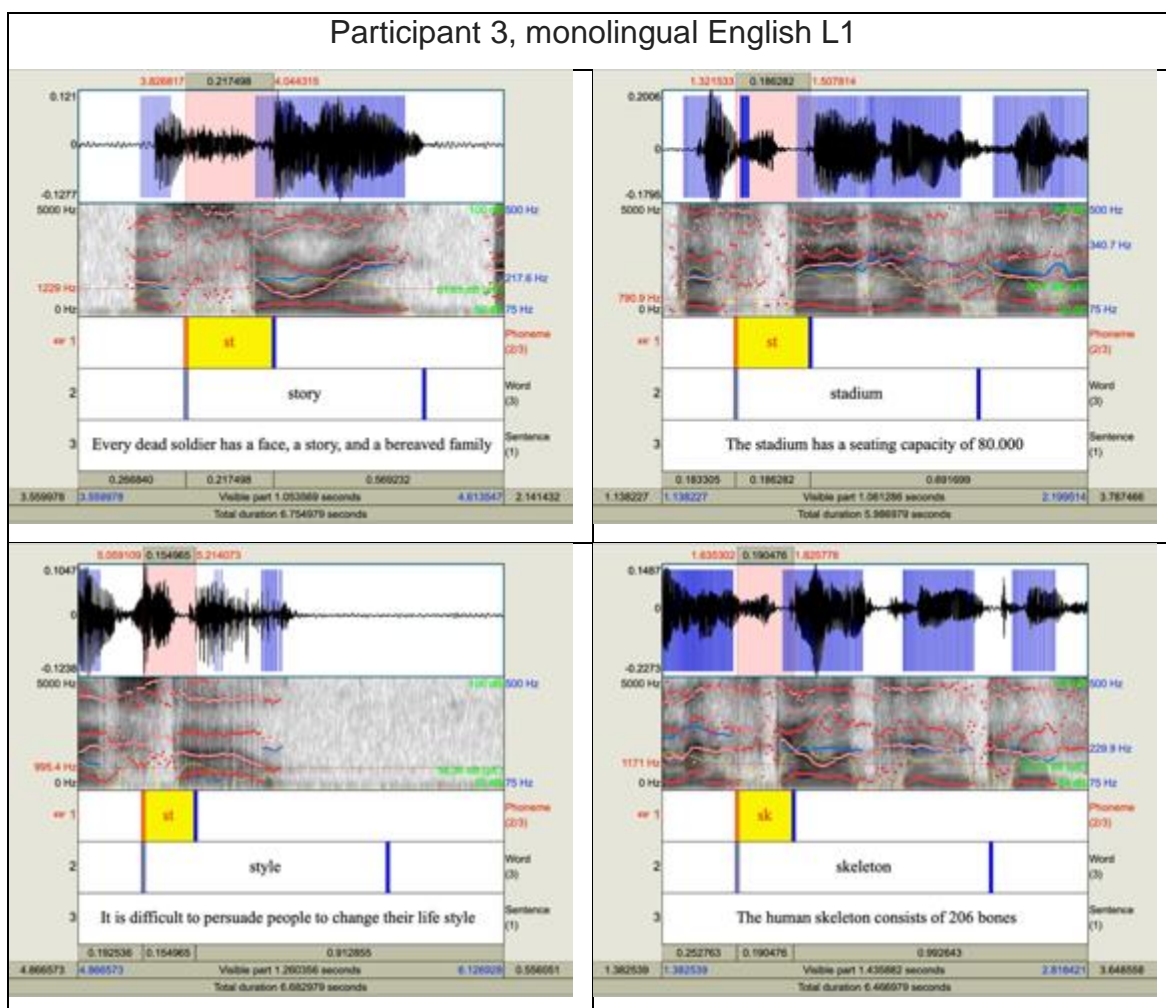
Participant 2, monolingual English L1

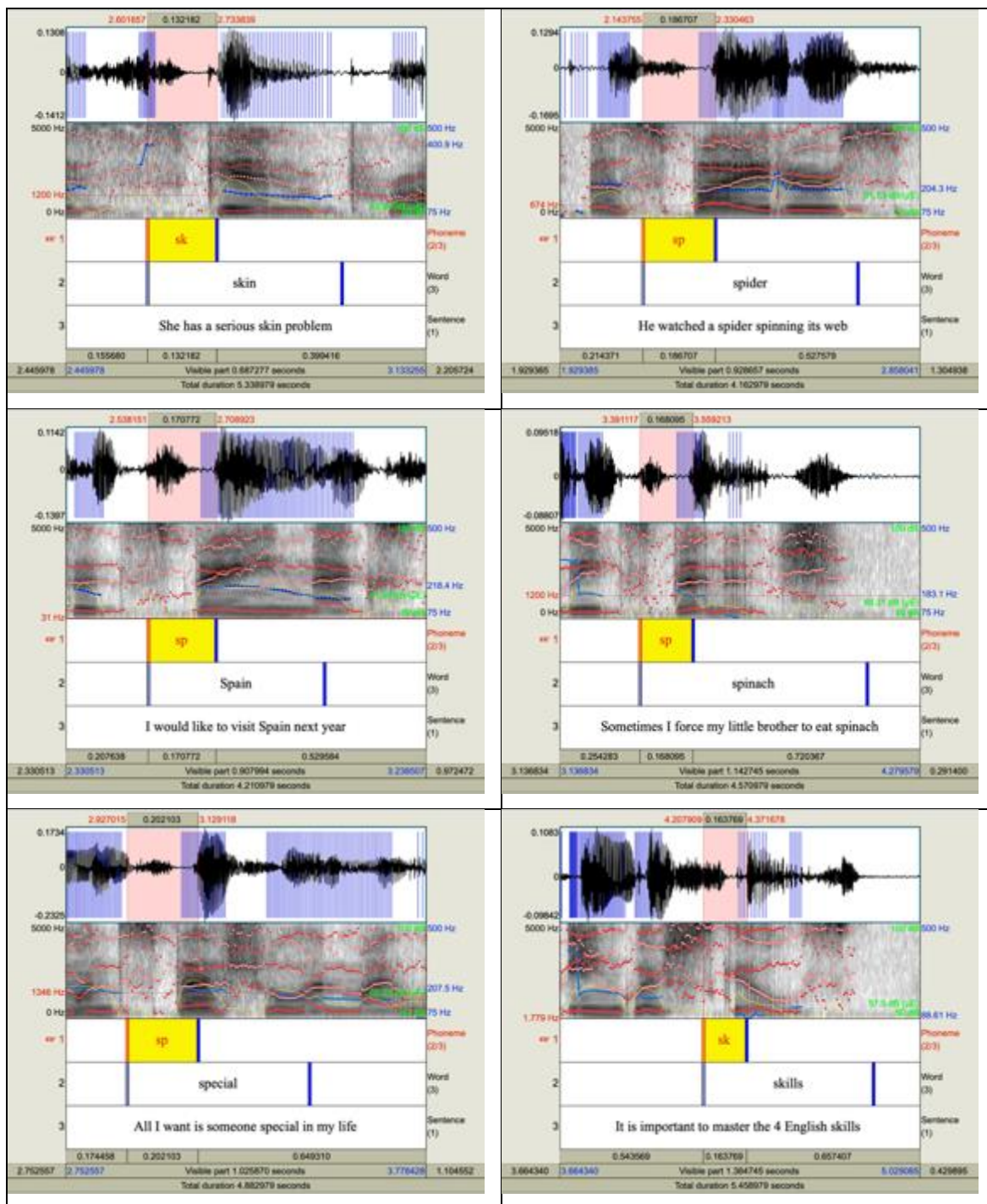






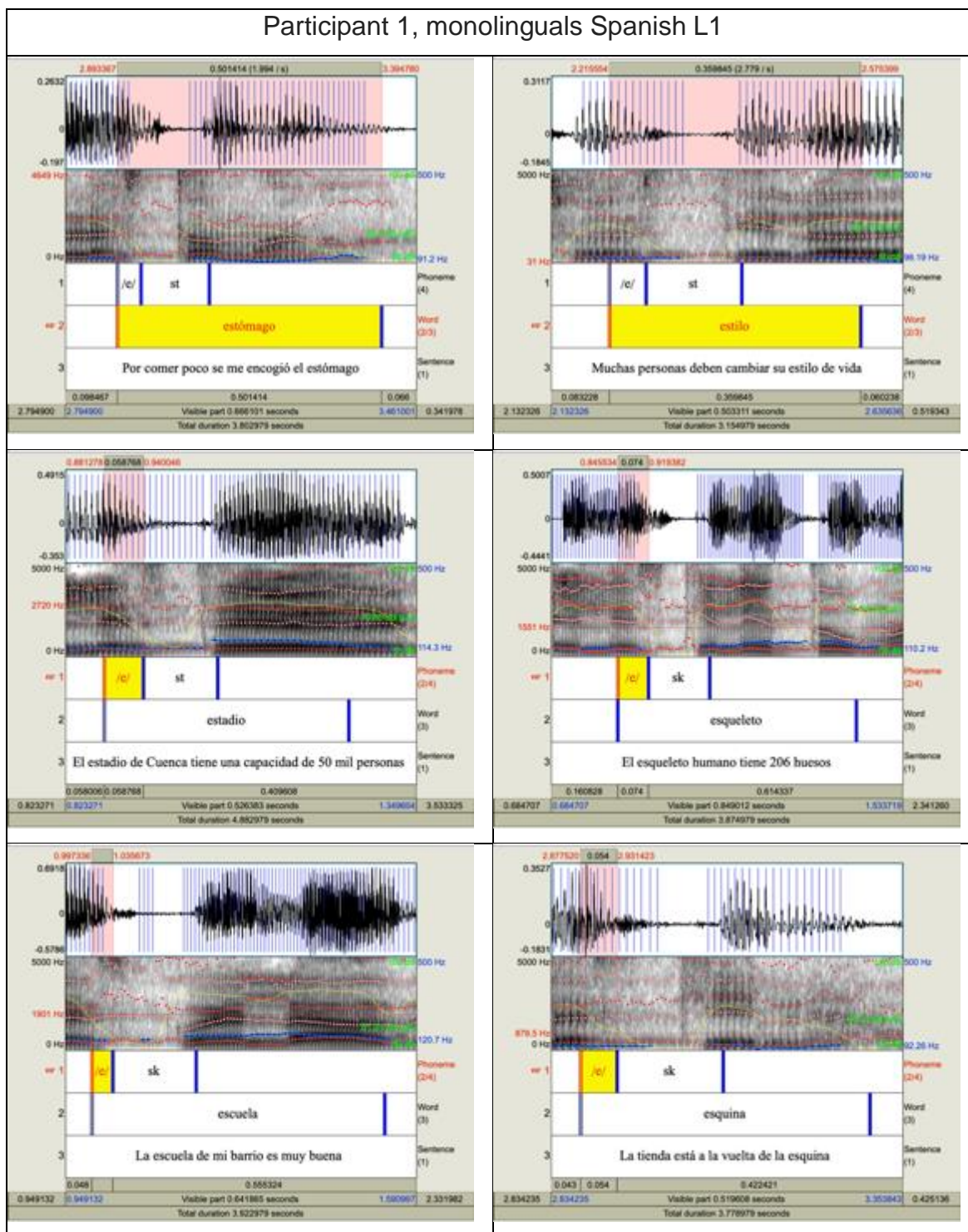
Participant 3, monolingual English L1

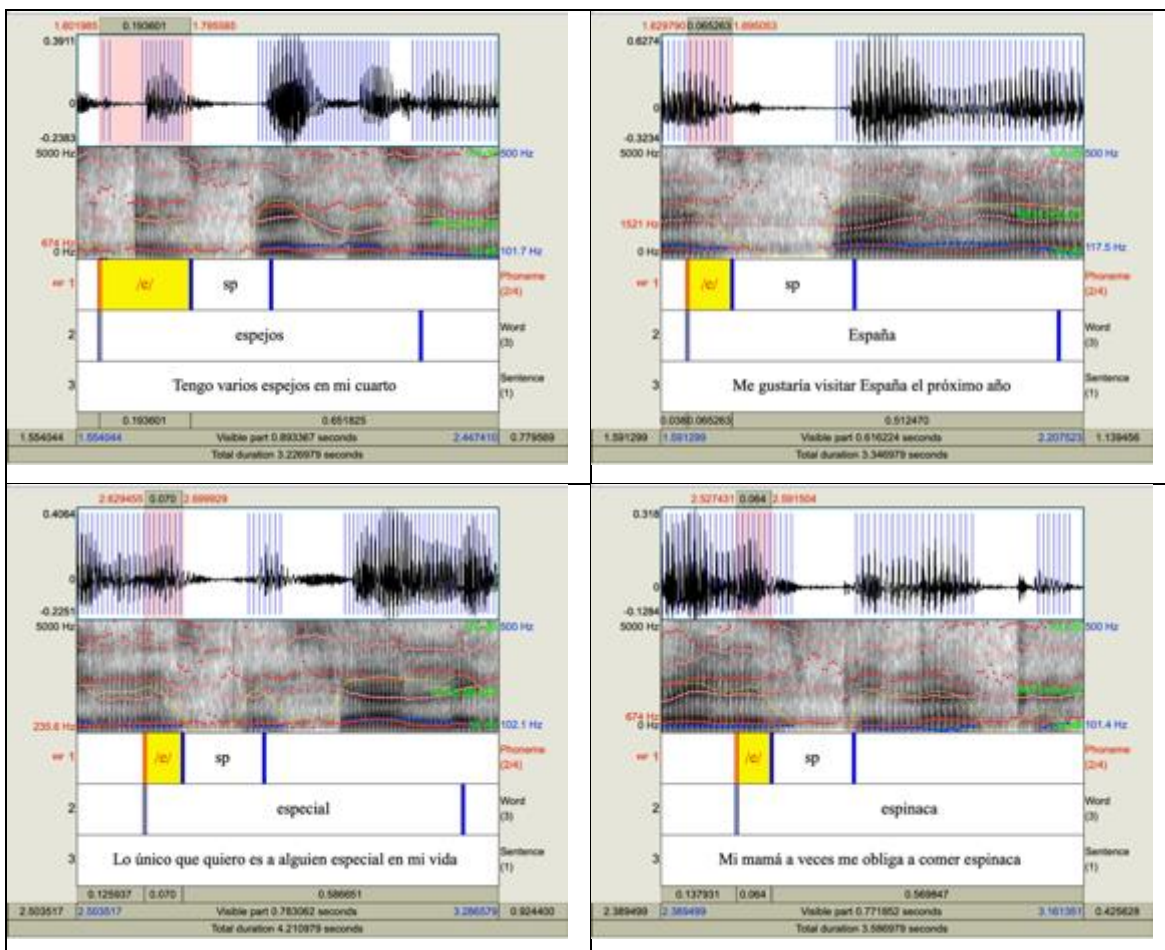




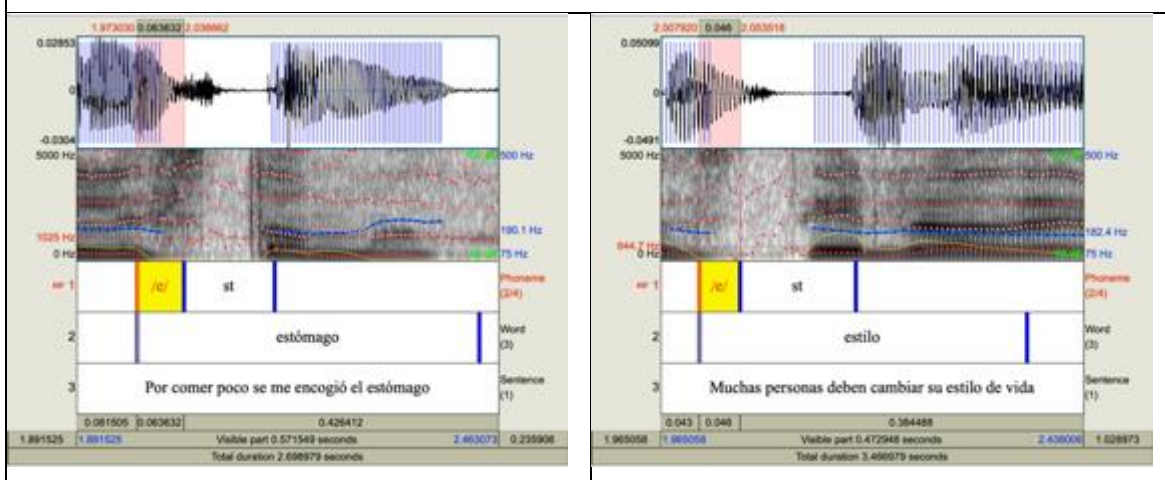
Annex 4. Spectrograms of the control group (Monolinguals Spanish L1)

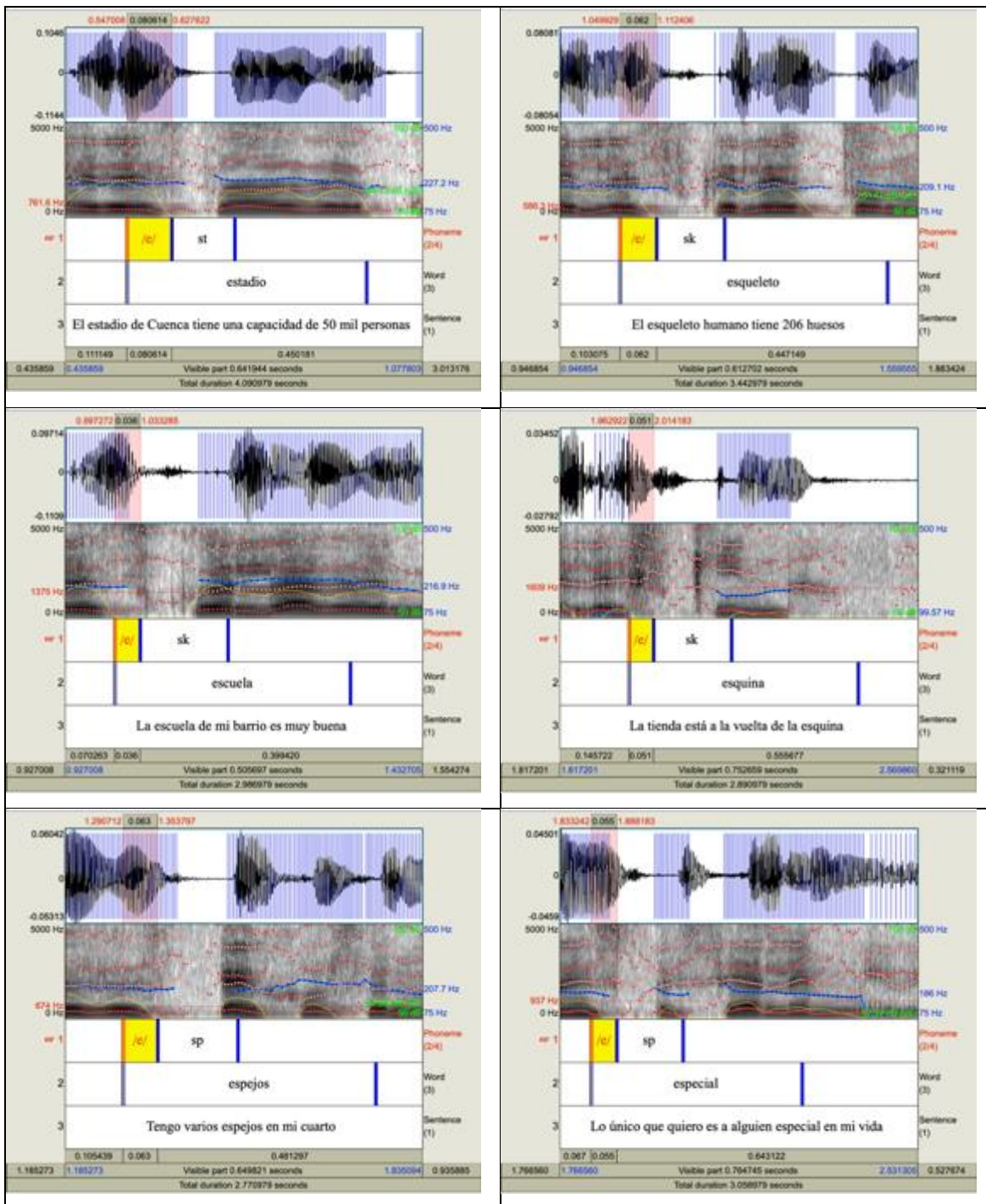
Participant 1

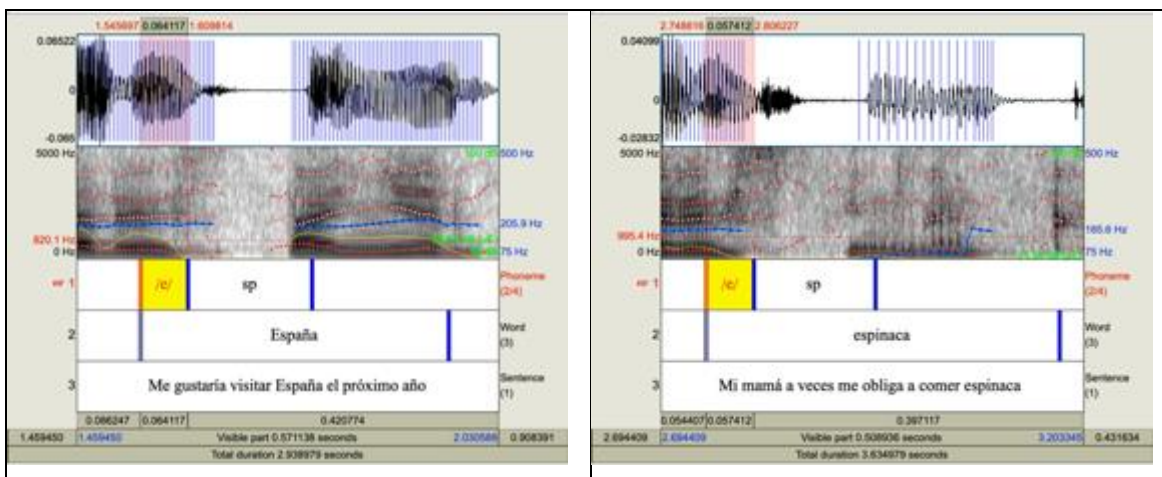




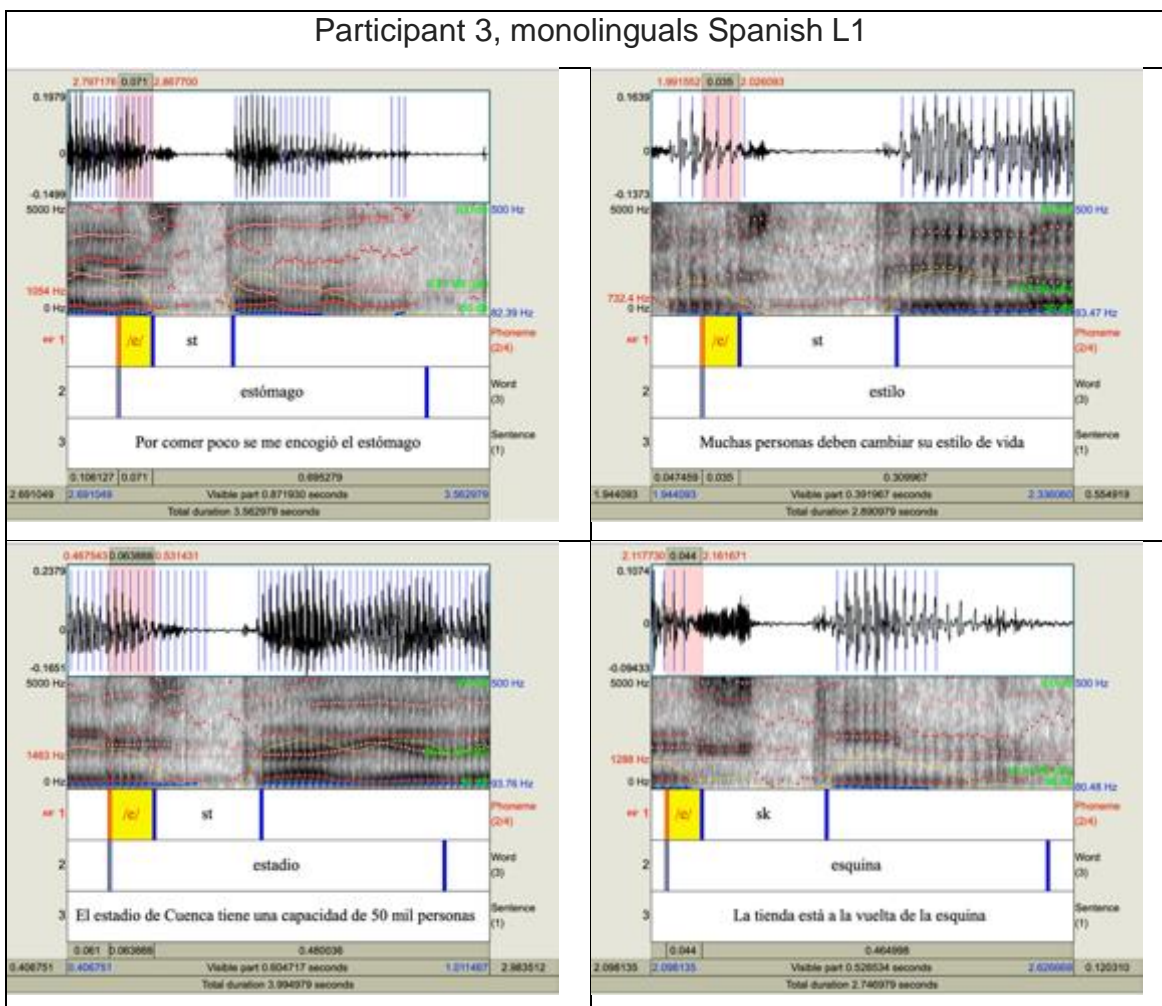
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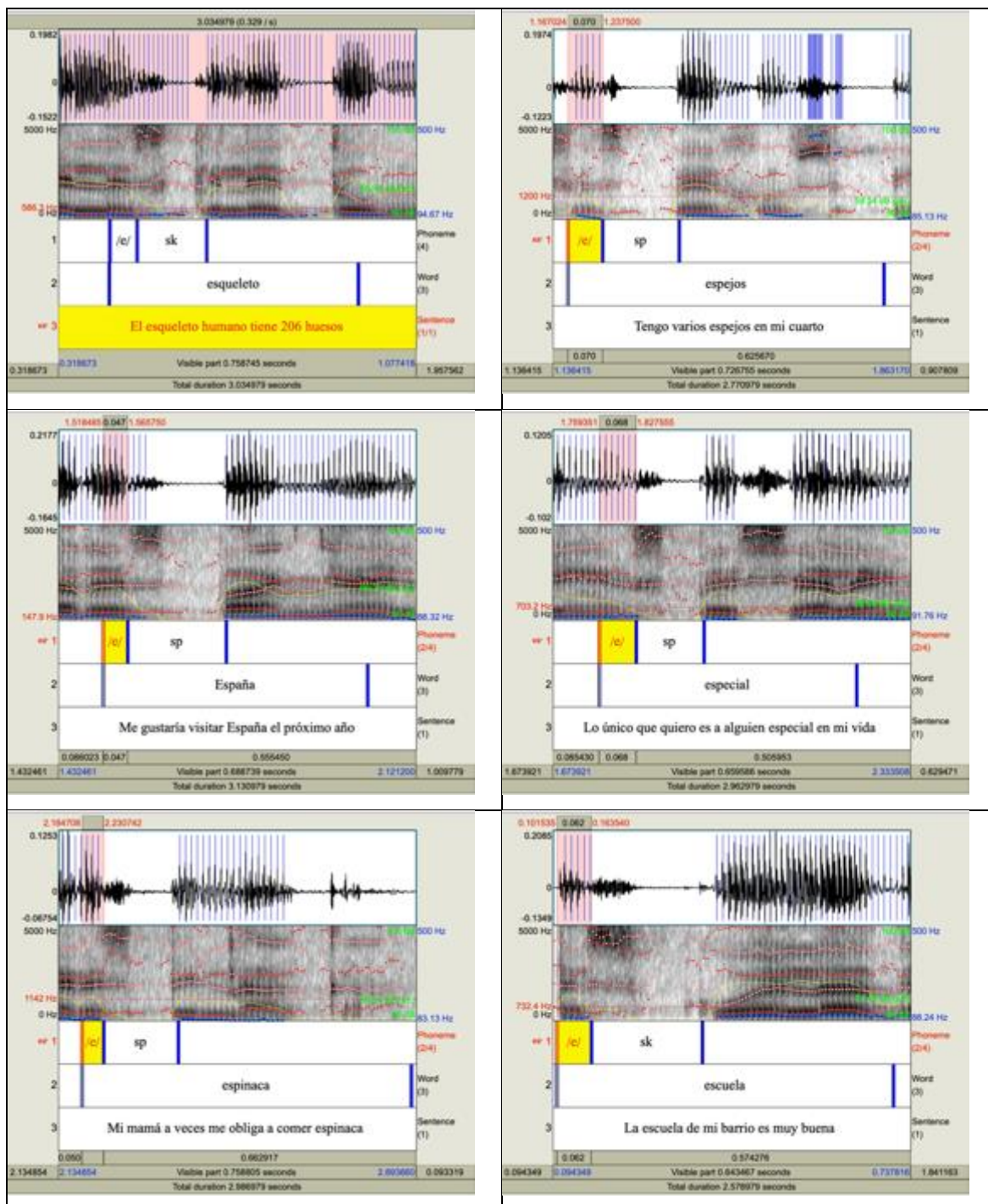




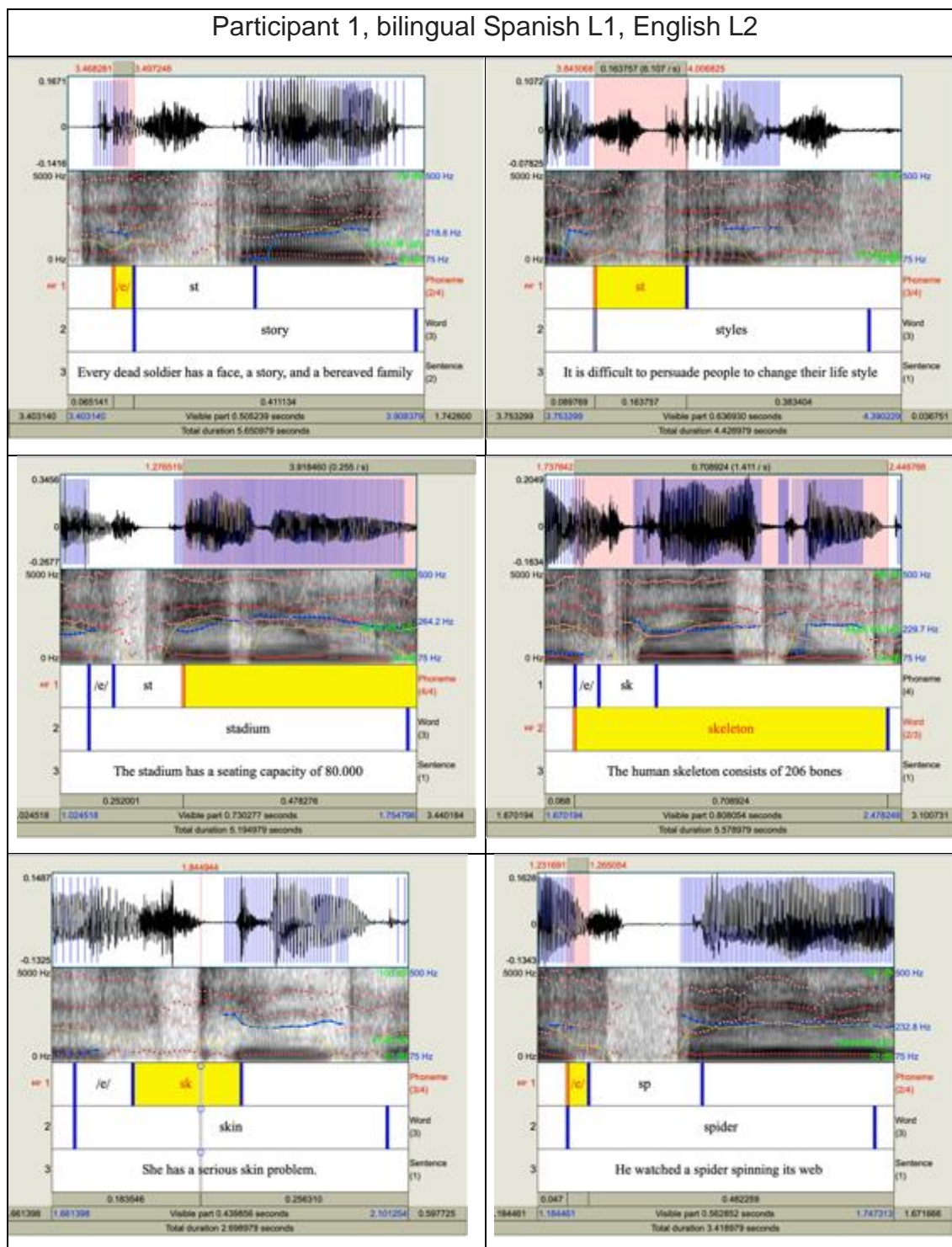


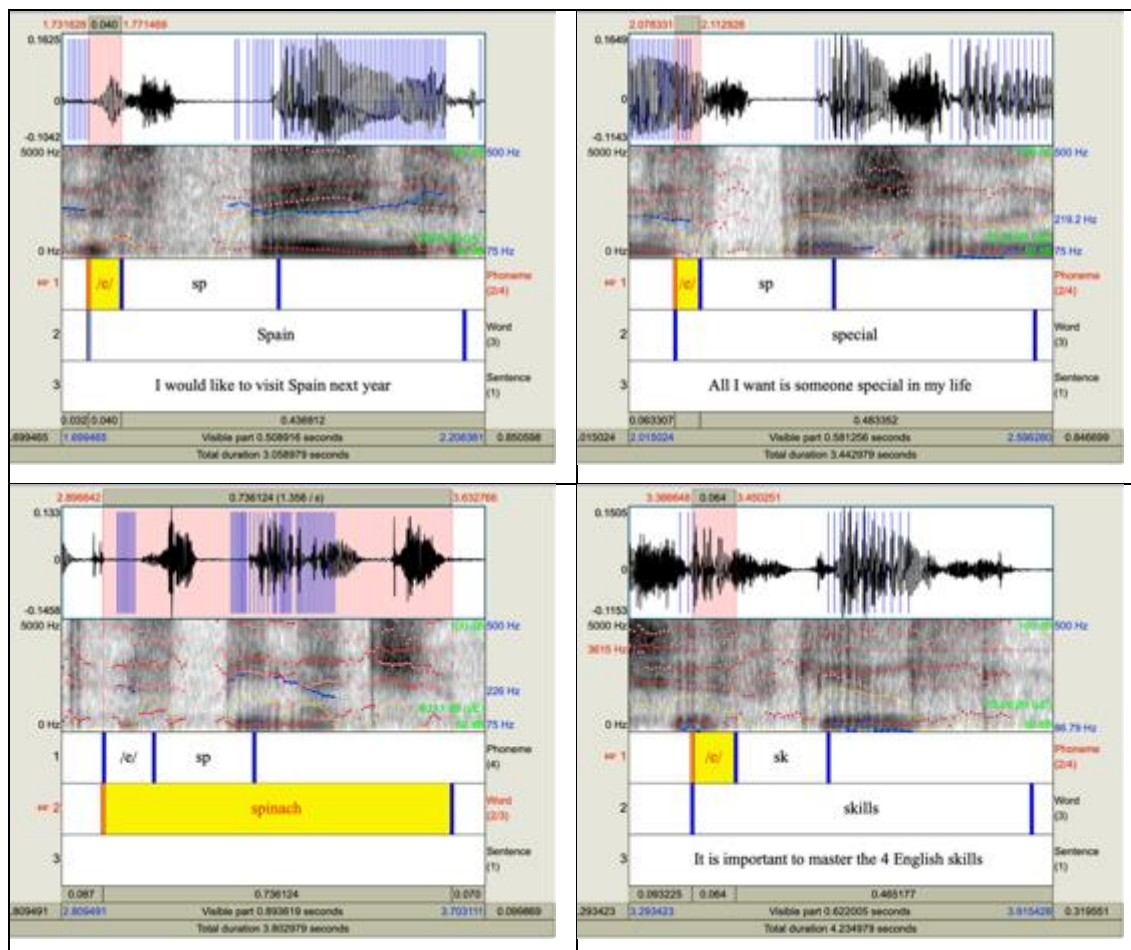
Participant 3, monolinguals Spanish L1



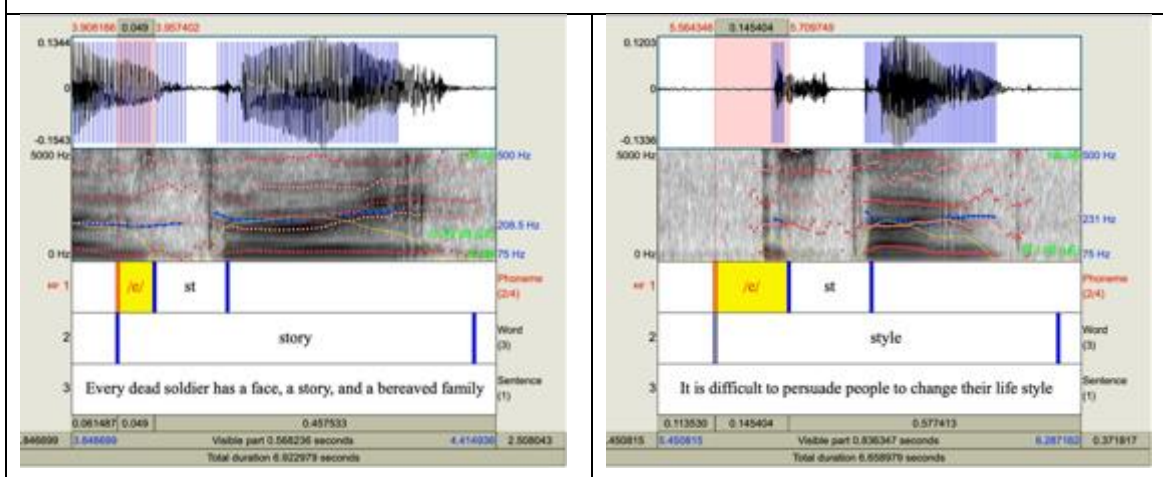


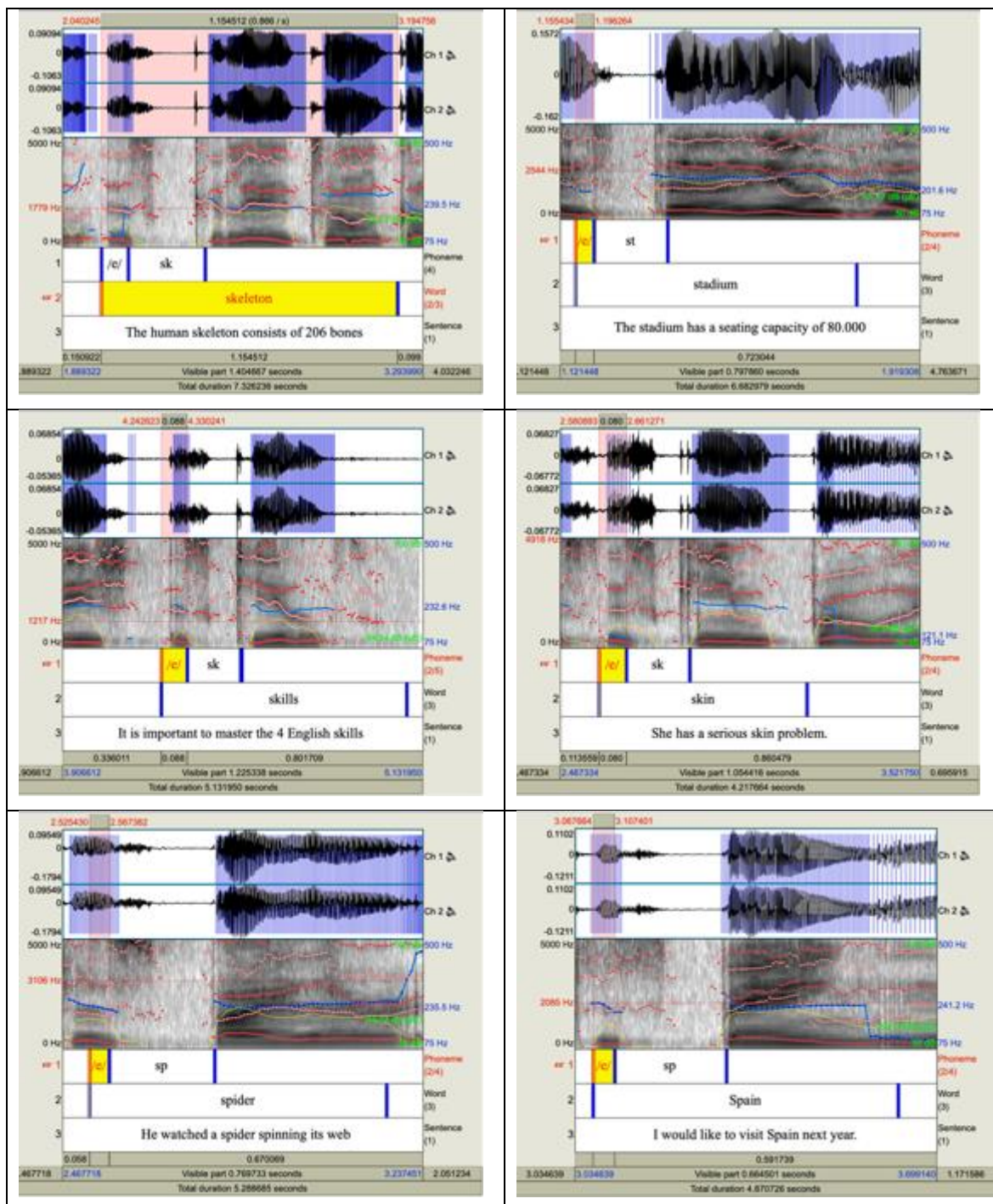
Annex 5. Spectrograms of the task group (bilinguals Spanish L1, English L2)

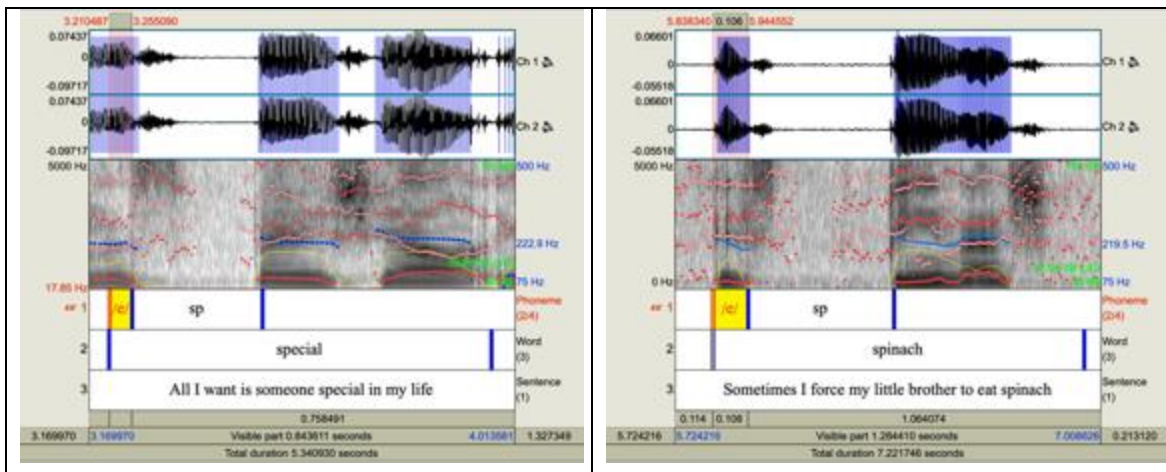




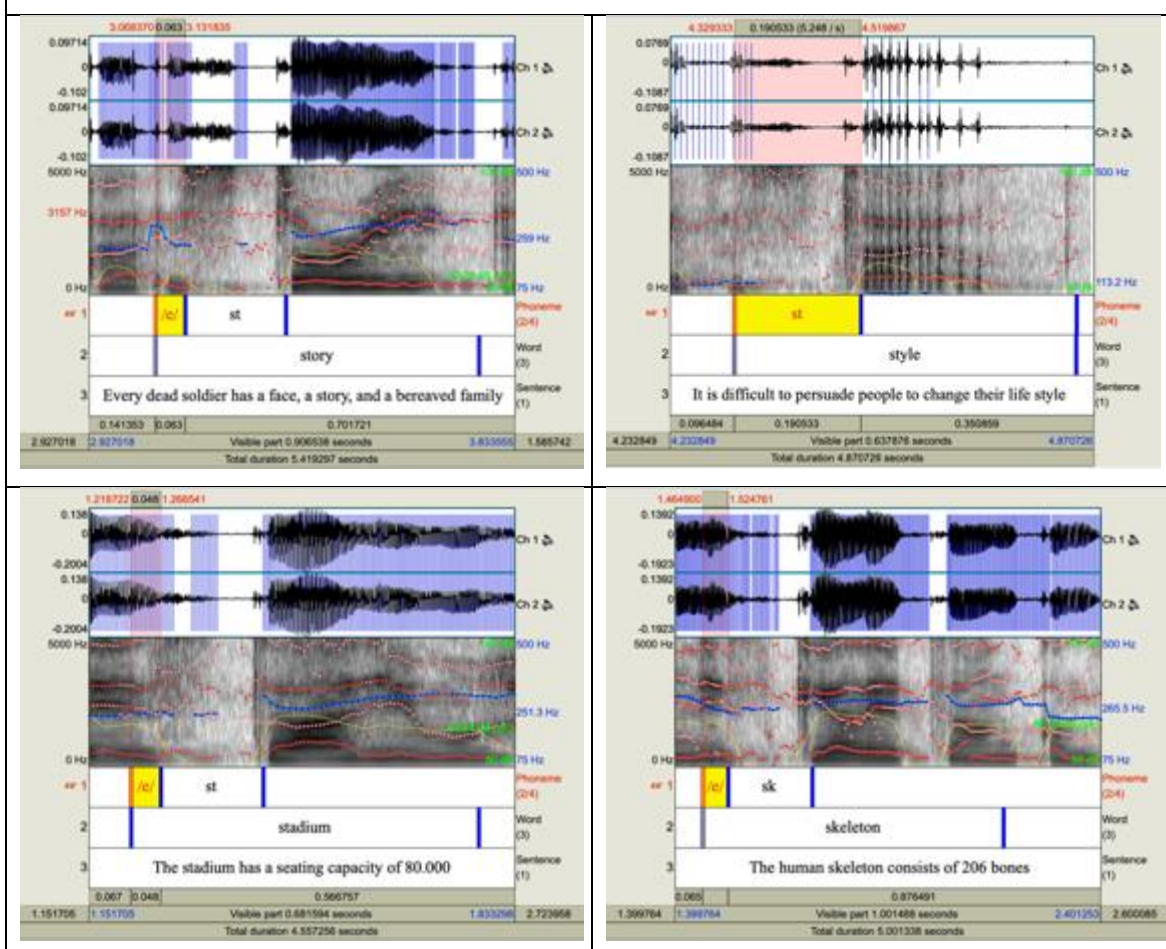
Participant 2, bilingual Spanish L1, English L2

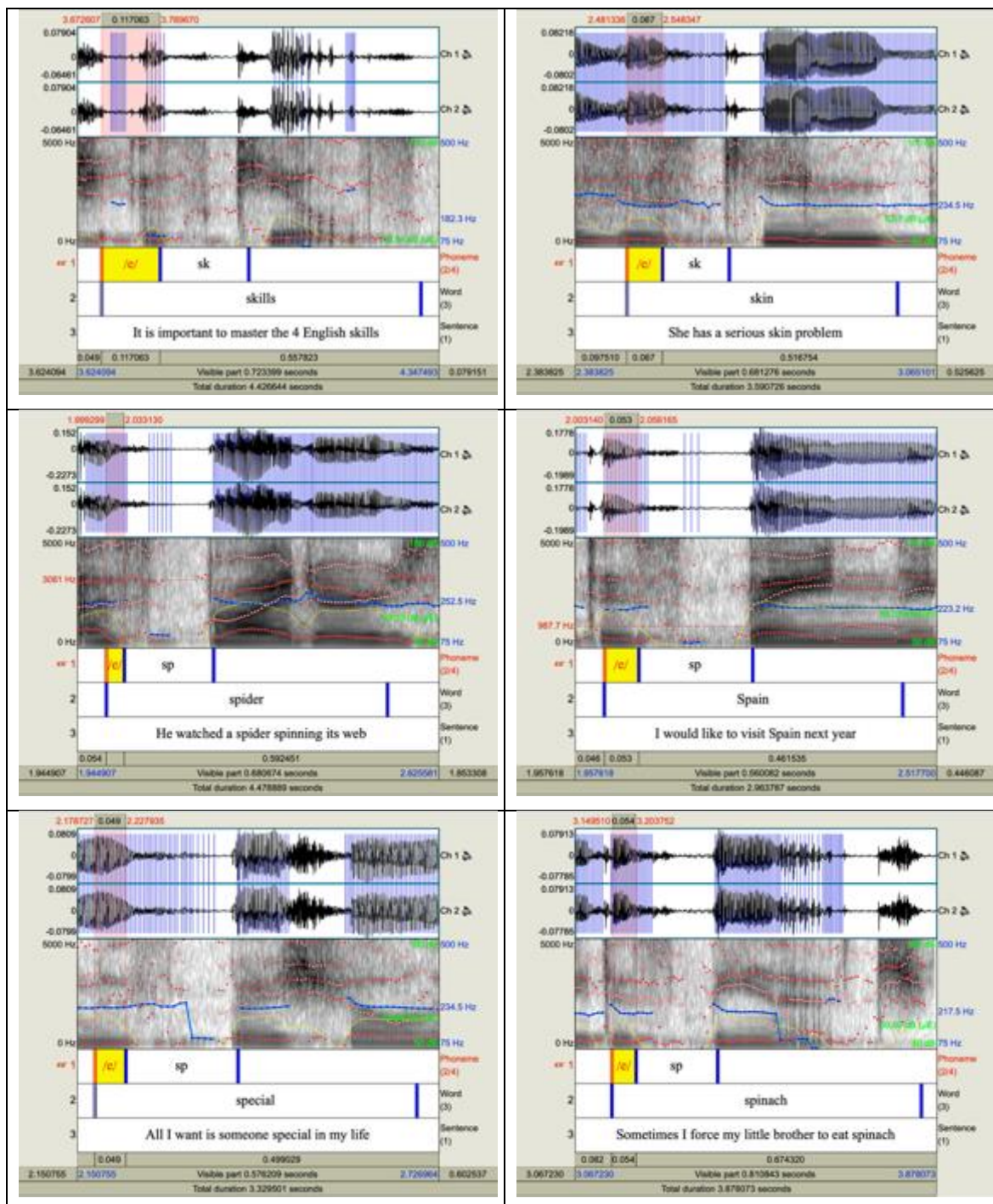




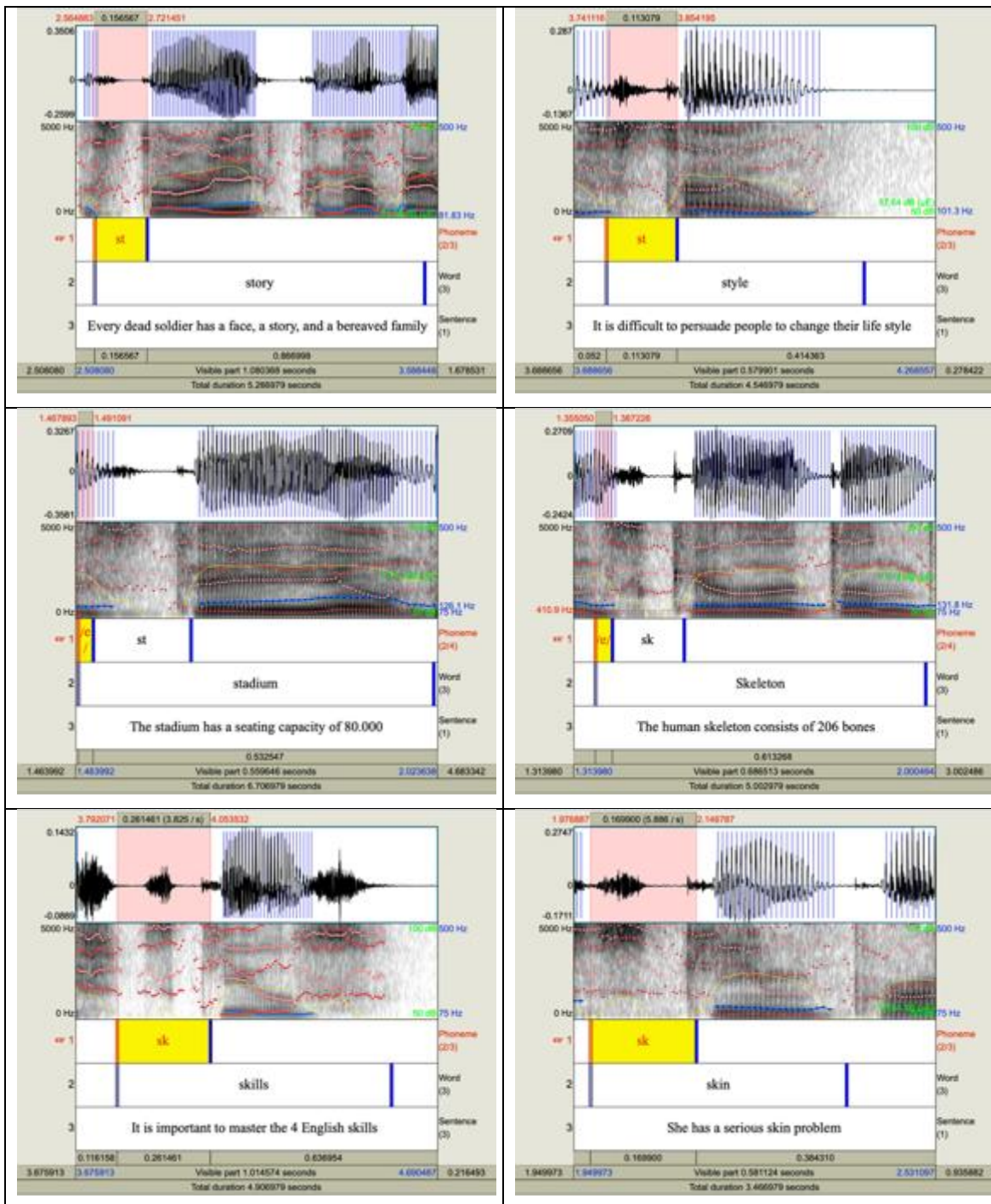


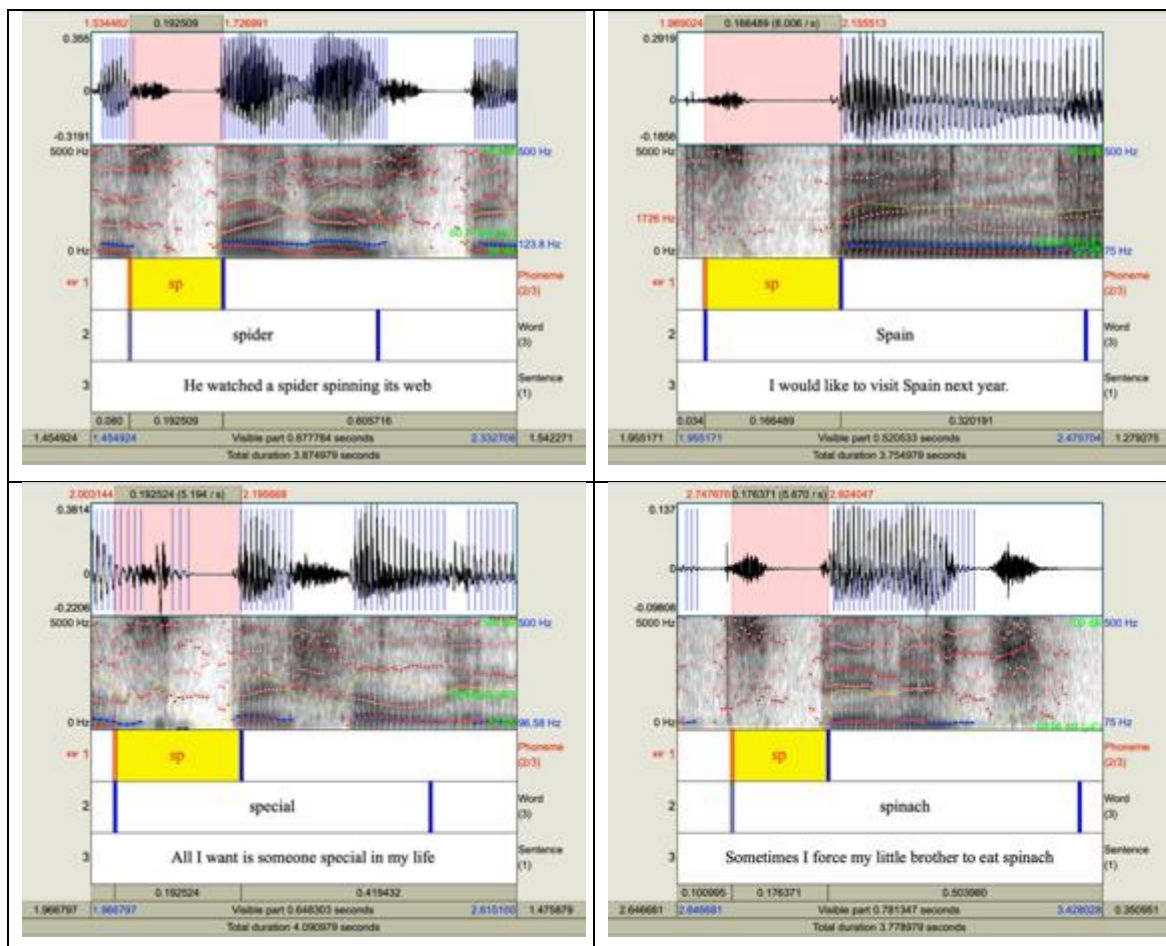
Participant 3, bilingual Spanish L1, English L2



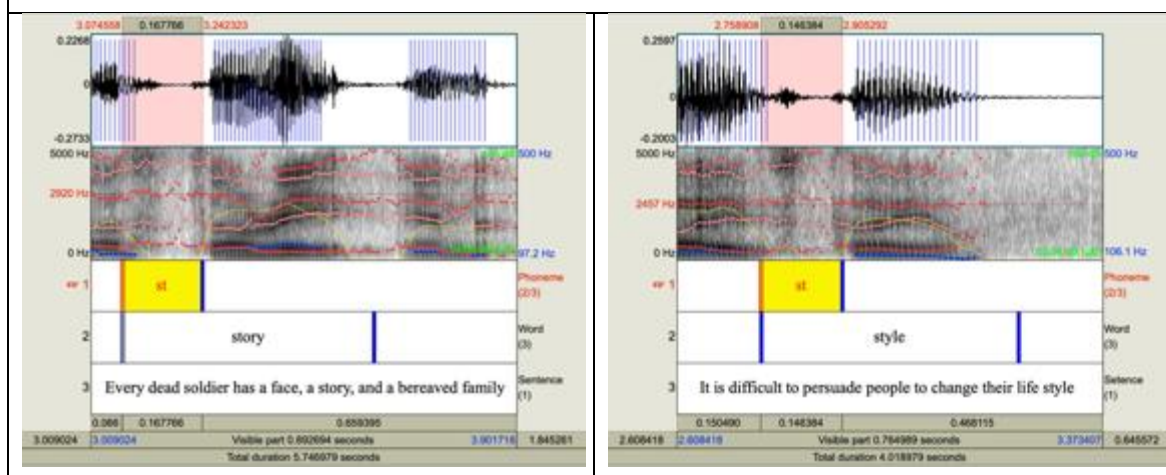


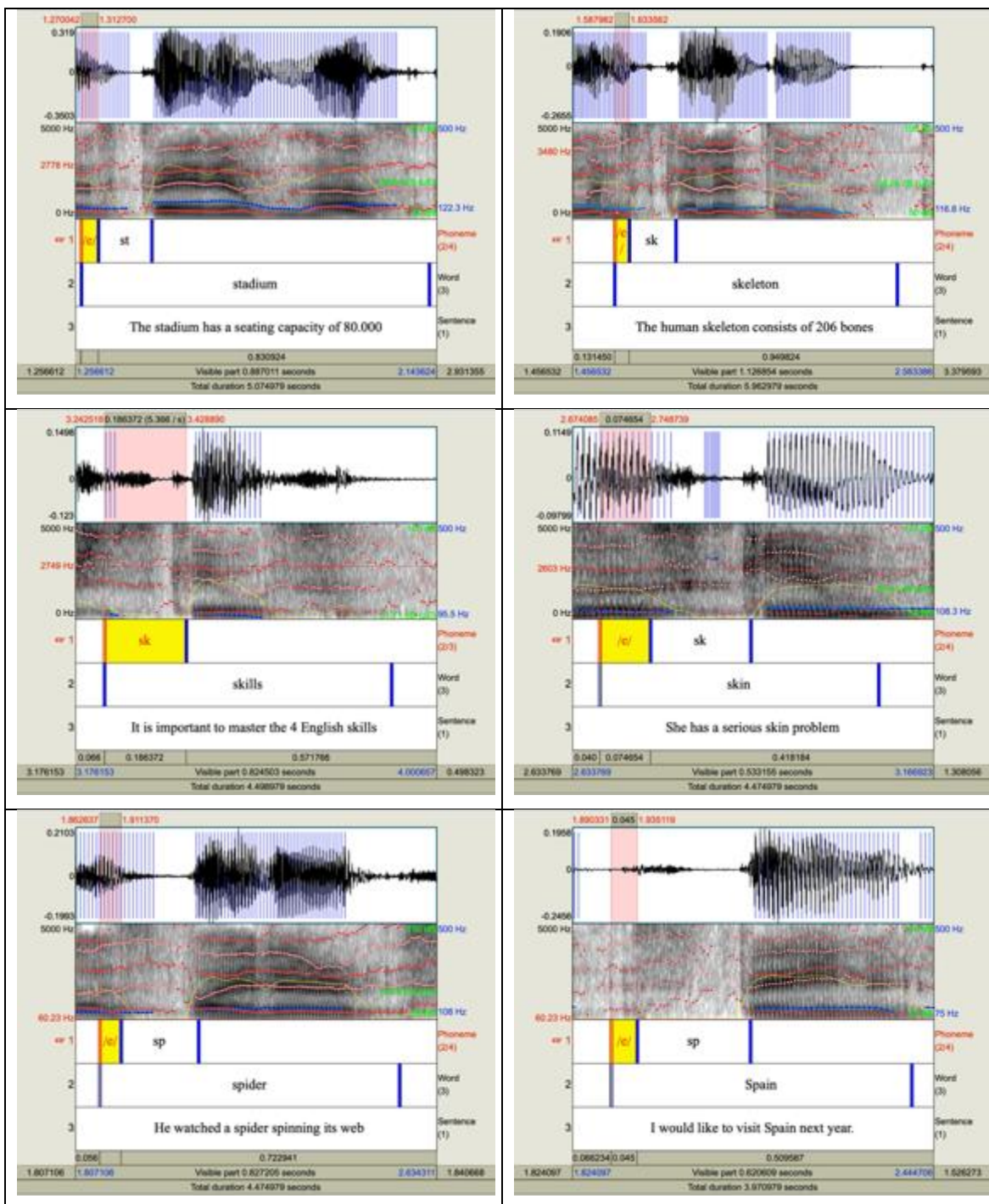
Participant 4, bilingual Spanish L1, English L2

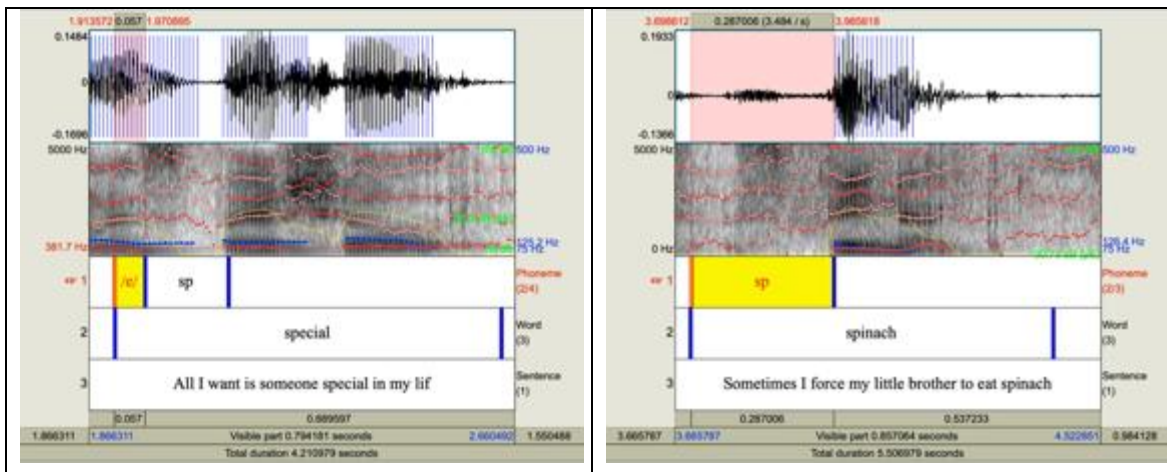




Participant 5, bilingual Spanish L1, English L2







Participant 6, bilingual Spanish L1, English L2

