The phonetics and phonology of Eastern Andalusian Spanish: A review of literature from 1881 to 2016

Fonética y fonología del español andaluz oriental: Revisión de literatura de 1881 a 2016

Phonétique et phonologie de l'espagnol andalou oriental. Un revue de littérature entre 1881 et 2016

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Abstract

Despite previous studies on Eastern Andalusian Spanish, interest in this geolect boomed only after the theory of *vowel doubling* was posited for this variety of Spanish. According to this theory, in Eastern Andalusian Spanish, vowels preceding /s/ aspiration or deletion change their quality and, as a result, carry the semantic function of /s/. Since then, many researchers have studied the vowel and consonant systems of this variety of Spanish and the phonetic-phonological debate is still ongoing. This article reviews the main studies on Eastern Andalusian Spanish pronunciation between 1881 and 2016, comparing the different findings in that period and summarising them chronologically. The article finishes with an outline of widely accepted and debated features of Eastern Andalusian Spanish in order to identify future lines of research.

Keywords: Eastern Andalusian Spanish, dialectology, vowel doubling, vowel harmony, Andalusian consonants

Resumen

A pesar de numerosos estudios previos sobre el andaluz oriental, el interés en este geolecto no se intensificó hasta la aparición de la teoría del *desdoblamiento vocálico.* Esta teoría proponía que, en el andaluz oriental, las vocales que preceden a /s/ aspirada o neutralizada cambian su timbre, el cual pasa a cumplir la función semántica de /s/. Desde entonces, un gran número de investigadores ha estudiado los sistemas vocálico y consonántico de esta variedad de español y el debate en cuanto a las unidades fonéticas y fonológicas del andaluz oriental sigue abierto. Este artículo revisa los principales estudios sobre el geolecto del oriente andaluz publicados entre 1881 y 2016, comparando las distintas conclusiones alcanzadas y resumiéndolas cronológicamente. Igualmente, se presentan más adelante las características del geolecto andaluz oriental que son generalmente aceptadas y otras sobre las que aún se debate con el fin de identificar posibles futuras líneas de investigación.

Palabras claves: andaluz oriental, dialectología, desdoblamiento vocálico, armonía vocálica, consonantes andaluzas

Received: 2016-06-16/Accepted: 2016-10-26
DOI: 10.17533/udea.ikala.v22n02a09

Résumé

Malgré le grand nombre d'études réalisées précédemment à propos de l'andalou oriental, cette variété d'espagnol a fait l'objet d'un intérêt accru après l'apparition de la théorie du *dédoublement des voyelles* dans le dialecte andalou. Cette théorie propose que, dans le dialecte andalou oriental, les voyelles précédant des consonnes aspirées ou supprimées altèrent leur timbre. Celui-ci devient alors porteur de la fonction sémantique de la consonne disparue. Depuis lors, de nombreux chercheurs étudient les systèmes vocalique et consonantique de cette variété d'espagnol, et le débat concernant la phonétique et la phonologie de l'andalou reste ouvert. Cet article présente une revue des études publiées sur le sujet du dialecte andalou oriental entre 1881 et 2016, et résume chronologiquement les conclusions obtenues par différents auteurs tout en les comparant les unes aux autres. De plus, le présent article expose les grandes lignes des caractéristiques du dialecte andalou généralement acceptées, et offre une discussion des théories qui font toujours l'objet d'un débat au sein de la communauté linguistique afin de proposer de nouvelles pistes de recherche.

Mots-clés : andalou oriental, dialectologie, dédoublement des voyelles, harmonie vocalique, consonnes andalouses

1. Introduction

Andalusian is one of the most studied varieties of Spanish, due mainly to its innovative pronunciation. These innovations have brought about some important changes to the phonetic and phonological structure of Spanish and, despite several works dedicated to this geolect, the debate regarding its features is still ongoing. Within Andalusian Spanish, Eastern Andalusian Spanish (henceforth *EAS*) is the variety which has received the most attention from researchers, an interest that boomed after the publication of Navarro Tomás (1938).

The present article offers a comprehensive review of the main studies which have been published on the phonetics and phonology of EAS between 1881 and 2016. The aim of this paper is to identify the key findings on the pronunciation of this geolect to identify what we know and what we do not know about EAS; thus, making it possible to suggest future lines of research. To that end, I will also analyse major controversies, contrasting different views and theories from various authors. However, unlike Mondéjar Cumpián (2006), the present study will only focus on EAS and studies with a strong focus on phonetics or phonology; sociolinguistic studies of EAS or studies regarding western Andalusian Spanish (WAS) will not be discussed unless they analyse features of EAS phonetics or phonology.

2. Methodology

As shown in Zamora Vicente (1960, p. 316) and Jiménez Fernández (1999, p. 63), there have been sporadic comments on Andalusian Spanish since the twelfth century. However, in this article, I will consider only those studies which focus on EAS accent or whose findings are relevant for its study, (a summary of the works discussed is included in Appendix 1).

Most of the studies reviewed for this article were written in Spanish and some decisions had to be made regarding the translation of Spanish names and terms. I have translated some quotes from Spanish or French and I have indicated when the translation is mine. Place names appear as they are written in English, for example, *Seville* instead of *Sevilla*. Following on from that, Spanish towns and cities that do not have a set spelling in English are spelt as in Spanish; however, accents have been removed (*Almeria* is written instead of *Almería)*. Finally, all linguistic terms appear translated into English, such as *desdoblamiento vocálico* as *vowel doubling* (when vowel opening marks an underlying /-s/). There are six exceptions to that rule, namely: *ceceo* (pronouncing Spanish /s/ as [ϴ]); *seseo* (pronouncing Spanish /ϴ/ as [s]); *distinción* (differentiating between the phonemes /ϴ/ and /s/); *confusión* (not distinguishing between the phonemes /ϴ/ and /s/); *heheo* (pronouncing intervocalic /s/ as [h]); and *yeísmo* (pronouncing /ʎ/ as /ʝ/).

It is important to note that Navarro Tomás (1938), and other authors after him, such as Rodríguez-Castellano and Palacio (1948a), use the term *dialecto* (dialect) to refer to EAS. However, I will not be using this term: *dialect* refers to differences in accent as well as vocabulary and/or grammar, as explained by Silva-Corvalán (2001, pp. 19-20), and a look at the literature shows that despite some minor differences in vocabulary, Andalusian Spanish (and EAS), differs from Castilian Spanish only in its pronunciation (Méndez García de Paredes, 2008).

To allow for a clearer presentation, this article has been divided into seven sections. Section 1 contains an introduction to this paper and Section 2 describes the methodology followed. Section 3 first focuses on the works published prior to 1938 and then it outlines the findings of Navarro Tomás (1938, 1939), which marks the beginning of the phonological debate. A review of findings between 1938 and 2016 is included in Section 4, and this has been further divided into vowel and consonant phenomena. In Section 5, a summary of what is known and not known about

EAS can be found, together with suggestions for possible lines of research. Section 6 has the final conclusions, and Section 7 contains a list of bibliographic references.

3. Review of literature: 1881 to 1939

3.1. Studies on EAS prior to 1938

As Mondéjar Cumpián (2011) said, Schuchardt (1881) offers the first detailed study of Eastern Andalusian pronunciation. This work was important for both its cultural and linguistic analysis, although I will only focus on the latter aspect.

Schuchardt (1881) explains how the Eastern Andalusian consonant system is simplified from Castilian Spanish; many consonants are deleted in various positions (*e.g.* /d/, /r/, /x/, and /l/), and *yeísmo* and *seseo* are the norm. Many sounds are substituted for others: for example, /l/ is pronounced [r] in *temblor* 'shake', which Schuchardt transcribed as *tembró*; /r/ and /k/ can be pronounced [i] or [u] in coda, with Schuchardt (1881) transcribing *recto* 'straight' and *carácter* 'character' as *reuto* and *caraite*. Epenthesis and metathesis are common and initial Latin *f* is pronounced [h]. Finally, Schuchardt (1881) explains how, in coda, /s/ is aspirated and pronounced [h] in all cases, except when the next word starts with a vowel.

This latter phenomenon is the one which has attracted more interest from linguists, given its phonetic and phonological implications. However, it is interesting to see how Schuchardt (1881) transcribes different syncopes and apocopes in EAS; *llorar (yorá)* 'to cry'; *carácter (caraite)* 'character'; *papel (papé)* 'paper'; *sed (sé)* 'thirst'; *reloj (reló)* 'watch'; *está (ehtá)* 'this sing. fem'; *mismo (mihmo)* 'same'; *los hombres (lo sombre)* 'the men'; *mientras en (mientraen)* 'whereas'.

Wulff (1889) builds on the data presented in Schuchardt (1881) and offers a much more thorough description of EAS, together with a list of proposed phonetic symbols to transcribe it. Wulff (1889) maintains many of the observations previously made in Schuchardt (1881), although he also contributes with some new data.

Regarding vowels, Wulff (1889) explains how in EAS, stressed vowels are frequently lengthened and vowels are pronounced "with different levels of energy" (my translation), which could be why authors such as Alarcos Llorach (1958) and Cerdà Massó (1992) talk about *vowel system doubling* (i.e. there are two types of EAS vowels, vowels similar to the ones in Castilian Spanish and vowels affected by a prosodeme). However, Wulff's (1889) most valuable contributions are on consonant phenomena.

Wulff (1889) identified the use of [h] for /x/, and the pronunciation of word-final /n/ as [ŋ]. Furthermore, he described the tendency to voice voiceless consonants, as in *campos* [ˈgampoʰ] 'countrysides', to pronounce /g/ and /k/ more as fricatives than as stops, and to pronounce /j/ as [j]. Wulff (1889) also found aspiration and lengthening of the final vowel in *luz* 'light', *vos* 'you plu. —mainly in Argentina—', *voz* 'voice', and *dos* 'two', with different vowel phenomena depending on the consonant deleted in each case: *toros* (toroh) 'bulls'; *abrasador* (abrasao:) 'really hot'; *soledad* (soleá) 'loneliness'; *cruz* (kruh) 'cross'; *espada* (empa:) 'sword'; *toril* (tori:) 'bullpen'; *pasar* (pasa·) 'to pass'. I also believe that Wulff (1889) was the first author to identify semivoicing and semidevoicing of consonants, as he transcribed *pica* as (pigka) 'he/she goads —a bull—'.

More importantly, Wulff (1889) was also the first author to identify the gemination of consonants following deleted /s/ and the gemination of /n/ after /r/ deletion. He noticed how aspirated /s/ can assimilate to the following consonant, as in *los pobres* [lom ˈpobreʰ] 'the poor'. Finally, he realised that certain variation in pronunciation between speakers is caused by sociolinguistic factors (e.g. pronouncing *mismo* 'the same' as either [ˈmimːmo] or as [ˈmimːo]) and he found differences between EAS accents, such as between the accents of

Granada and Murcia (e.g. pronouncing *carne* 'meat [ˈkanːne] in Granada or [ˈkasːne] in Murcia).

In Navarro Tomás (1916), we have a study on the vowels /a/ in *padre* 'father', the second /e/ in *tener* 'to have', /e/ in *aquella* 'that sing. fem.', /i/ in *pide* 'he/she asks for', the second /o/ in *olor* 'smell', /o/ in *olla* 'pot', and /u/ in *tu* 'your'. Strictly speaking, this study does not focus on EAS; however, it is important for the study of this geolect as Navarro Tomás acknowledged that there could be, at least phonetically, more than five vowels in Spanish. He concluded that the biggest opening of the jaw for Spanish vowels happens in /a/*-padre,* with an openness of 12mm. This openness gets smaller in the rest of the vowels, with 10mm for /e/*-tener*, 7mm for /e/*-aquella*, and 5mm for /i/*-pide*, followed by 8mm for /o/*-olor,* 6mm for /o/*-olla, and* 4mm for /u/-tu. In this manner, Navarro Tomás (1916) proved that there were seven phonetic vowels in Spanish.

Navarro Tomás et al. (1933) also brought about important consequences for the study of EAS, as the authors provided examples of word-final consonant deletion in this geolect, such as *seis* [Θeẹ] and *subir* [huˈßi]. The authors described the areas of *seseo, ceceo,* and *distinción* at the time, although Herrero de Haro (2016b) shows the need to re-examine the current extent of these phenomena. Navarro Tomás et al. (1933) identified western Almeria (from Adra to Vicar) as an area where *ceceo* was the norm, although the authors already foresaw a change, as they mentioned that in places like Roquetas younger speakers tended to distinguish (/s/ and /Θ/). A preliminary analysis of some data I have gathered in the area suggests that *distinción* is now the norm there.

Furthermore, Navarro Tomás et al. (1933) concluded that, despite general beliefs, there was *distinción* in almost a third of Andalusia, and I believe that this percentage would be much higher now due to various sociolinguistic factors, such as schooling and the effect of media on people's speech. Navarro Tomás et al. (1933) found that there was mainly *distinción* in Jaen and Almeria; *distinción* and lack of *distinción (confusión)* in Huelva, Cordoba, and Granada; and more widespread *confusión* in Seville, Cadiz, and Malaga. Generally, *distinción* is more common in the East and in the mountainous regions of the North, and *confusión* is more common by the coast and in the plains.

Navarro Tomás et al. (1933) found three realisations of /s/ across Andalusia; a concave apical (which is the same one found in Castilian Spanish), a convex predorsal, and a flat coronal. The allophone of /s/ that each Andalusian speaker uses depends on his/her area of origin. He also said that *seseo* and *ceceo* became more common in Seville around 1570, and that it then extended to other parts of Andalusia. As a conclusion, Navarro Tomás et al. (1933) posited that the border between Castilian and Andalusian Spanish cannot be accurately represented by a dividing line that separates *distinción* and *confusión* or by the political limits of Andalusia. Instead, the limit between both accents is better distinguished by the area where we find Castilian /s/ (typically concave apical) and Andalusian /s/ (typically either convex predorsal or flat coronal). For the authors, the convex predorsal or flat coronal /s/ is the most characteristic sound of Andalusian Spanish, which is why it marks the geolect's extent, an opinion shared by Zamora Vicente (1960, p. 288) and Llorente (1962), although the latter proposes different areas of localisation for different types of /s/.

3.2. Navarro Tomás (1938, 1939): the beginning of the debate

Navarro Tomás (1938) was the landmark study which boosted interest in EAS. Previous works on EAS had been mainly anecdotal and resembled a collection of peculiarities; however, this study posited a thorough description of a previously unidentified phenomenon: vowel opening following /s/ deletion or aspiration.

In his study, Navarro posited that, in EAS, the phoneme /s/ was deleted at the end of syllables in word-medial and word-final positions and that, as

a result, the omission of /s/ opened the previous vowel; this phenomenon is called *vowel opening*. Thus, minimum pairs such as *la* and *las,* and *lo* and *los* would be differentiated not by the presence or absence of /s/, but by a contrast between a closed and an open /a/; marking an underlying /-s/ by vowel opening is called *vowel doubling*. Navarro Tomás (1938) said that sometimes /s/ is aspirated in [h], although he admitted that vowel doubling could only operate if [h] is also deleted; for vowel doubling to be in operation, the semantic meaning of deleted /-s/ has to be carried out by vowel quality, not by an aspiration ([h]).

According to Navarro Tomás (1938), before deleted /s/, /a/ is velar, and /e/ and /o/ are more open. Navarro also said that EAS had the same degree of evolution word-medially and word-finally, meaning that vowel doubling was not limited to word-final position. Navarro Tomás (1938) was the first author to realise the consequences of /s/ deletion; however, he did not take into account deletion of other consonants[1].

Navarro Tomás (1938) posited that it would not take too long for /s/ in coda to disappear completely from Andalusian, as it had happened a long time ago in French; both, Navarro Tomás (1938) and Wulff (1889), commented on the parallelisms between French and Andalusian Spanish. Furthermore, Navarro Tomás (1938) was the first scholar to describe vowel doubling before /s/ deletion by saying that "the timbre acquired by the preceding vowel, under the influence of the deleted consonant, generally carries the semantic function of the deleted consonant" (my translation). For Navarro (1938), the deleted consonant refers only to /s/; however, a preliminary analysis of some data I have gathered in western Almeria suggests that this also happens with /ϴ/, /p/, /ß/, /f/, /t/, /ð/, /l/, /r/, /k/, /ɣ/, and /x/ in coda. For example, Herrero de Haro (2016b) shows that words such as *ve* 'he/she sees', *ves* 'you sing. see' and *ver* 'to see' are all distinguished from each other in EAS once the final consonant in each of them is deleted; this is due to an alteration in the quality of the vowel preceding the deleted consonant[2]. At this point, it is important to remember that Navarro Tomás (1938), as many authors would do after him, such as Lloret and Jiménez (2009), was talking about EAS varieties with *seseo,* as he equated *ves* and *vez.* Likewise, Alonso et al. (1950) already differentiated between different types of /a/; however, they did not give these a phonemic value.

Another phenomenon identified by Navarro Tomás (1938) was vowel harmony, at least some sort of it; the opening of stressed vowels in plurals, even when they are not in final positions (e.g. /o/ in *bocas* 'mouths', and /e/ in *negros* 'black plu. masc.'. Likewise, he also reported that open vowels in plural are much longer than closed vowels in singular. Navarro Tomás (1938) said that the stressed /a/ in *blancas* 'white plu. fem.' acquires a more velar tone than the one in singular, and this velar nature of plural /a/ has also been a common topic of discussion amongst EAS scholars. It is worth noting that the term *singular vowels* refer to vowels which do not precede a deleted consonant

1 A preliminary analysis of some data gathered in western Almeria shows that all consonants (except /r/, /l/, and /n/) are deleted at the same rate and in the same contexts in word-final and in word-medial codas. The consonant /r/, which can be pronounced in coda as /ɾ/ by some speakers, is always deleted in coda in word-final position. However, in word-internal position, it is only deleted if it is followed by /n/ or /l/, or as the last consonant of the infinitive in the structure *infinitive+object*, as in *decirme* 'to say to me'. This data also show that speakers from lower socio-cultural backgrounds delete /r/ in *decirte* 'to say to you sing.' and do not mark this deletion of /r/ with vowel opening. In EAS, /r/ is the only consonant whose deletion is more developed in word-final than in word-medial coda.

2 Herrero de Haro (2016b) posits that vowels tend to move towards the place of articulation of the deleted consonant, as if coarticulation still happened even after the consonant has been deleted. However, I think that Navarro Tomás (1938) had already noticed something similar when he said that the vowels preceding deleted /l/ and /r/ tended to be between the one in singular and the one before deleted /s/.

and the term *plural vowels* refer to vowels preceding underlying /-s/.

Finally, Navarro Tomás (1938) posits that, to compensate for the loss of significant elements, EAS tends to form a vowel system that could become one of the most characteristics features of Spanish dialectology, which Alvar (1955a) and Salvador (1977) supported. Navarro Tomás (1938) talked about eight vowel phonemes in Andalusian Spanish (/e/, /a/, /o/ and their open counterparts), with /i/ and /u/ not splitting, identifying vowel doubling as an emerging norm.

Navarro Tomás (1939) revisits his previous theories and adds a few observations, although the key ideas remain unchanged. He describes the aspiration of /s/ in coda in more detail, explaining that the aspiration could be lost or that it could be either realised as a voiceless or a voiced aspiration. Navarro Tomás (1939) refers to studies which identify /s/ deletion in New Mexico, Buenos Aires, Ecuador, Lima, and Mexico, but none of them mention vowel doubling.

Regarding the alteration of the vowel system, Navarro Tomás (1939) believes that coda-final /s/ is reduced to an aspiration, and that the vowel preceding that aspiration becomes more open. When that aspiration is lost, the vowel maintains its openness, meaning that this feature starts to carry the semantic function of the deleted /s/. Navarro Tomás (1939) thought that it would be natural for this differentiation to also exist in other geolects where final aspiration of /s/ occurs, but later studies, such as Poplack (1980), show that this is not the case, at least in Puerto Rican Spanish.

While in Navarro Tomás (1938) we have an explanation of vowels in EAS plurals as being more open and longer than singular vowels, Navarro Tomás (1939) talks about the *whizzing sound* found in those plural vowels, and about the intensity of its vibration, which he considered a hangover of the of old aspiration of /s/. Furthermore, he believes that plural vowels sound more tense and intense than singular vowels, making /e/ different in *ves* 'you sing. see' and in *guerra* 'war', despite both of them being open. This *tense* and *intense* character of plural vowels would be investigated later on by other researchers, and it would form the base for the argument of *vowel system doubling* rather than *vowel doubling*. In the same way, Navarro Tomás (1939) also identified /l/ and /r/ deletion, as in *sol* 'sun' and *flor* 'flower', and although he said that the vowels in those cases are also open, they are not open in the same degree as the ones preceding deleted /s/; vowel preceding /r/ and /r/ deletion are also shorter and lack that whizzing character.

Navarro Tomás (1939) also noticed the difference in pronunciation in different sociolects, which accounts for why we can find [s], [h], [ɦ] and complete deletion coda-finally in the same area. Similarly, Alvar (1955b) explained how /s/ deletion happened in Latin in lower classes. According to him, /s/ was omitted in Latin after short vowels and before a word that started with consonants. After the third century, /s/ was reintroduced in official documents in Latin, although uneducated people continued omitting it.

Interestingly, Navarro Tomás (1939) believed that even though plural vowels in EAS have phonological value, these are not given phonological value by speakers. This is briefly mentioned in Navarro Tomás (1938), but he expands on it in his 1939 article: in pairs like *ve* 'he/she sees' and *ves* 'you sing. see', "the idea does not lie in recognising the vowel difference with the distinction that it expresses, but in recognising the loss of /s/, which is maintained in writing and in Castilian Spanish" (my translation). Herrero de Haro (2016b) posits something similar for EAS *ver* and *vez* —the idea is to recognise whether the missing consonant is /r/ or /ϴ/, not in differentiating between vowels. Navarro Tomás (1939) believes that with time, the differentiating role of singular and plural vowels could make these vowels be perceived as individual phonemes, although he thinks that it might be more likely for those differences to be

reduced as they have in French *fille* 'daughter' vs. *filles* 'daughters', and *voie* 'way' vs. *voix* 'voice'.

Finally, Navarro Tomás (1939) thought that the difference between singular and plural could also be reduced when aspiration is lost.

4. Studies of EAS post 1939

Navarro Tomás's (1938, 1939) theories started a debate which is still ongoing. Indeed, many of the features currently being studied by contemporary scholars have already been mentioned in Navarro Tomás (1938, 1939), Schuchardt (1881) or Wulff (1889), although there have also been new lines of research not identified previously by these authors.

4.1. Vowel phenomena

4.1.1. Vowel doubling in EAS: arguments in favour

The next study to examine EAS vowel doubling after Navarro Tomás (1938, 1939) was Rodríguez-Castellano and Palacio (1948a). This was the first article to study the vowels of a specific area within Eastern Andalusia (Cabra, in the province of Cordoba) in detail.

In their impressionistic study, Rodríguez-Castellano and Palacio (1948a) stated that differences between open and closed vowels were more noticeable in Cabra than in Castilian Spanish; this was especially obvious for /e/ and /o/. Decades later, Peñalver Castillo (2006) re-examined the speech of Cabra and found vowel harmony and lengthening of vowels preceding /s/ deletion, concluding that vowel opening affects all vowels, especially /a/, /e/, and /o/. Likewise, Martínez Melgar (1986) also reported that all EAS vowels open when they precede a deleted /s/. According to Martínez Melgar (1986), this opening is more obvious in /e/ and /o/ and less in /i/ and /u/, although these views are challenged by other authors who reject opening of /i/ and /u/ preceding /s/ deletion (e.g. Sanders, 1998).

Interestingly, Rodríguez-Castellano and Palacio (1948a) register the same pronunciation for /as/, /aϴ/, and /að/ once the final consonants are deleted, while Salvador (1957) claims that /e/ preceding deleted /s/ is different from /e/ preceding deleted /θ/; this is proved acoustically in Herrero de Haro (2016b). However, Salvador (1957) did not believe this was the case for /i/.

Alonso et al. (1950) also considered the effect of the deletion of different consonants on the preceding vowel, being the first authors to describe different types of /a/. According to Alonso et al. (1950), /a/ is more open in *palos* 'sticks' than in *barcos* 'boats'; there is aspiration in *más* 'more' and the vowel is more nasal and palatal than in *mar* 'sea' and in *mal* 'bad'; /a/ in *más* is pronounced with the tongue moving towards the lower teeth, and in *mar* and *mal* it moves towards the upper ones. In *mal* the tongue is raised as soon as the vowel stops being pronounced and in *mar* this happens later. Despite all this, Alonso et al. (1950) believe that, generally, vowels express the difference between singular and plural, although their analysis did not include perceptual analyses. For Zubizarreta (1979), however, *mal, mar* and *más* sound the same once /l/, /r/, and /s/ have been deleted. Likewise, Alarcos Llorach (1983) claims that all vowels are pronounced the same before deleted /r/, l/, or /x/, and Cerdà Massó (1992) claims that *es* and *el* are pronounced [e̝] in EAS (the symbol ̝ indicates lowered vowels).

The debate regarding vowel quality in EAS was quite intense around the 1950s, with an extensive body of impressionistic studies. Rodríguez-Castellano and Palacio (1948a) described different types of phonetic variants of /e/ depending on the following consonant; however, they also reported a totally open /e/ with phonemic value in Cabra, which was more obvious in stressed syllables (e.g. *pelos* [ˈpe̝lo̝] 'hairs'). On the other hand, Alonso et al. (1950) did not find any obvious differences between the /e/ of *tres* 'three', *miel* 'honey', and *pies* 'feet'. Rodríguez-Castellano and Palacio (1948a) claimed that, in Cabra, /e/ in singular words was much more closed

than in Castilian Spanish, although they thought it was due to the effect of comparing open and closed /e/. Likewise, Rodríguez-Castellano and Palacio (1948a) and Alonso et al. (1950) found that /o/ tended to be more closed in singular. Alonso et al. (1950) also believed that singular vowels were more closed, especially /e/, and for Alvar (1955a), Salvador (1957), Alarcos Llorach (1958) and, years later, for Peñalver Castillo (2006), singular vowels were more closed in Andalusian than in Castilian Spanish. This closing of vowels in EAS seems to be a way of making vowel opening more noticeable. Lloret and Jiménez (2009) explained how something similar happens in the Italian dialect of Ascrea, where high unstressed final vowels (which are grammatically meaningful) close medial stressed vowels to reinforce that morphological element. Alonso et al. (1950) and Salvador (1957) also believed that vowels were more closed when they appeared with vowels of the same quality in a word (e.g. *eje* 'axle'). Furthermore, Alonso et al. (1950) and Salvador (1957) equated the openness of /e/ in plural to that of /a/ in singular.

Four decades later, Martínez Melgar (1994) carried out an acoustic study in the provinces of Jaen, Granada and Almeria, and concluded that vowels were more open when preceding /s/ deletion. Martínez Melgar (1994) claimed that /a/, /e/, and /i/ were opened and backed preceding /s/ deletion, and that /o/ and /u/ were opened and fronted, with /e/ and /o/ presenting the biggest differences in F1. Martínez Melgar (1994) concluded that differences between singular and plural vowels in EAS were always meaningful (e.g. consistent). Corbin (2006) additionally noted that "the laxing of a vowel is characterised by centralisation"; however, she found that in the centralisation of vowels, fronting and backing was a less robust change than lowering.

The debate regarding EAS vowels is somewhat more complex when it comes to /i/ and /u/. Rodríguez-Castellano and Palacio (1948a) found subtle differences between different types of /i/ and /u/, but these were less obvious than those for /e/ and /o/; they agreed with Navarro Tomás (1938, 1939) on the fact that /i/ and /u/ do not double. Navarro Tomás (1938, 1939), Rodríguez-Castellano and Palacio (1948a), Salvador (1977), Alarcos Llorach (1983), Martínez Melgar (1994), Sanders (1998), Jiménez and Lloret (2007), and Lloret and Jiménez (2009) considered vowel opening a compensation strategy, as it only appears when the consonant is deleted, and they believed that the aspiration of a sound caused vowels to open. Mondéjar Cumpián (1979) went a bit further and insisted that the aspiration of /x/, /s/, /θ/, /r/, and /l/ opened the previous vowel, being the first author to posit that all consonants can be aspirated in coda in Andalusian Spanish. This aspiration marks the semantic differences, but once this disappears, openness becomes the distinctive feature, considering vowel opening as the historic end of the process of /s/ elimination in coda. In other words, Mondéjar Cumpián (1979) saw aspiration and opening, respectively, as a step in the process of disintegration of /s/ in coda, and the final stage (at least for the time being) of that very same process.

However, Contreras Jurado (1975) thought that in EAS, singular/plural distinction was maintained thanks to the intensification of a characteristic already present prior to /s/ loss, which Cerdà Massó (1992) considered the most original approach; Contreras Jurado (1975) posited that /s/ had already caused the preceding vowel to open before /s/ was deleted, and that this deletion did not increase the openness of the vowel. EAS intensified this feature extending it to the stressed vowel and, in several other cases, to the rest of the vowels in a word. Contreras Jurado (1975) was the first researcher to posit this, which would also be posited with slight modifications in Hualde and Sanders (1995). In their theoretical analysis, Hualde and Sanders (1995) posited that vowels preceding /s/ were raised in EAS before /s/ was deleted, which made it possible to omit /s/ and still mark the plural. According to Hualde and Sanders (1995), this would explain why EAS is the only variety of Spanish which deletes final

/s/ and presents vowel doubling, meaning that a previous distinction existing before /s/ deletion was phonemicised once that deletion had taken place. Hualde and Sanders believe that:

> the raising of unstressed mid vowels in absolute final position which, in our hypothesis, was the original trigger of a sg/pl distinction based on vowel quality, appears to be on its way out, given its negative connotations; whereas, lowering or laxing in plural, a secondary development which does not carry the same social stigma, is establishing itself as the significant feature in the opposition. (1995, p. 432)

García Mouton (1992) explained how some women maintained /s/ and still opened the preceding vowel, which supports Contreras Jurado's (1975) and Hualde and Sanders' (1995) position; however, García Mouton (1992) also noticed that women in Jaen, Granada, and Almeria alternated between open vowel and [a^{h}], which presents vowel opening as an effect of [h] deletion.

Corbin (2006) analyses this issue examining constraint rankings and claims that "if lenition were ordered before laxing, laxing would not occur, therefore laxing must occur first" (p. 56), which supports Hualde and Sanders (1995). Furthermore, Corbin (2006) believes that "the relationship between laxing and lenition appears to be one of counter-bleeding, since an ordering of lenition before laxing would eliminate the environment for laxing" (Kiparsky, 1973, cited by Corbin, 2006, p. 32).

Rodríguez-Castellano and Palacio (1948a) pointed out how young people in the Cabra area no longer needed a brief aspiration of /s/ to express plurality; they could do it just with vowel opening, which also presented the phenomenon as an emerging trend, an opinion also defended by García Mouton (1992). Furthermore, Rodríguez-Castellano and Palacio (1948a) argue that vowels before deleted /l/, /r/, /s/, or /θ/ in words that are not plurals are not as open as in plural words, and they do not give those vowels a phonemic value. For Alonso et al. (1950), vowels of singular words open when they precede deleted /r/, /l/, /s/, or any other aspirated consonant, and the only consonant that closes vowels in these contexts is /n/ (e.g. *ratón* 'mouse'). Rodríguez-Castellano and Palacio (1948a) argue that in those cases, the last vowel is the only one that opens. I disagree with this, as a preliminary analysis of my data for a future article indicates that both vowels open in words like *crater* 'crater' following /r/ deletion.

Alonso et al. (1950) decided to study high socio-cultural classes to prove that vowel doubling was present in all socio-cultural strata of the city of Granada. Salvador (1957) and Zamora Vicente (1960, p. 290) also considered it present across all levels of society and, more recently, Peñalver Castillo (2006) found it across all socio-cultural levels and age groups in Cabra. However, Alonso et al. (1950) and García Mouton (1992) indicated that women showed a higher tendency to maintain /s/.

According to Salvador (1957), vowel opening started in the nineteenth century and this system is the only one present in young people and for men of all ages; even more, the very few older ladies who maintain /s/ understand (and even use at times), the system based on vowel doubling. Alonso et al. (1950) maintained that vowel doubling appeared in the speech of Granada and Almeria, that it could also be found in people from Cordoba, and that vowel opening reaches the stressed vowel, not only the final one. Alonso et al. (1950) conclude that these vowels are constant in all speakers, but that consonants seem to vary between speakers and even within the same person.

Some authors (e.g. Navarro Tomás, 1938; Rodríguez-Castellano and Palacio, 1948a; Salvador, 1957: and García Marcos, 1987) believe that the process of /s/ loss in coda has not finished yet in EAS. The fact that Andalusian Spanish is a variety in evolution, as García Marcos (1987) and O'Neill (2010) suggest, could explain why the use of /s/ and of vowel lengthening are so variable.

Alvar (1955a) explained that, despite the limitation of the data gathered thus far, he could point

out that the loss of /s/ in plurals had caused various processes: a) vowel opening with a very noticeable phonological value; b) vowel opening with no phonological value, which was the beginning of distinction; c) no distinction between singular and plural vowels. Interestingly, Salvador (1977) also commented on this, arguing that, in some places in western Andalusia, speakers pronounce vowels similar to those in Eastern Andalusia, although they cannot distinguish between them phonologically. This might be, I believe, because they have recently lost the aspiration of /s/ in those areas and they have not had enough time to phonologicise those open vowels. Poplack (1980) also mentions that in Puerto Rican Spanish, vowels preceding /s/ deletion are phonetically different, but that there is no phonological difference. Zubizarreta (1979) presents an idea which seems to be in the middle, as she believes that to understand Andalusian vowel harmony, we need to differentiate between phonological and phonetic laxing.

Even those who support vowel doubling do not agree on which vowels double. Navarro (1938, 1939), Rodríguez-Castellano (1948a), Alonso et al. (1950), Zamora Vicente (1960), Ueda (1993), and Martínez Melgar (1994) support vowel doubling only in /a/, /e/, and /o/. On the other hand, Alvar (1955a, 1955b) was the first author to support vowel doubling in the five Castilian vowels. Martínez Melgar (1986) claims that vowels tend to be open in plural and, although she noticed certain opening in /i/ and /u/, she did not consider it relevant. Jiménez and Lloret (2007) also studied word-final vowel laxing following /s/ deletion and concluded that "mid vowels open at the end of words, low vowels further front, and final high vowels open to a lesser degree."

Salvador (1957) also supported the idea of vowel doubling of the five Castilian vowels, although he said that open /i/ is usually found in word-final position in verbs and that opening of /u/ is not as regular as in other vowels. Salvador (1977), on the other hand, would reject /u/ doubling. However, other authors would reject Salvador's (1957, 1977) claims: Zubizarreta (1979) distinguished between phonetic and phonological laxing and she believed that /i/ and /u/ undergo phonetic but not phonological laxing; for Martínez Melgar (1994), /i/ and /u/ do not have vowel harmony; and for Jiménez and Lloret (2007) and Lloret and Jiménez (2009), /i/ and /u/ do not present vowel harmony in stressed position. Likewise, Jiménez and Lloret (2007) and Lloret and Jiménez (2009) believe that /i/ and /u/ are the only vowels that do not lax in post-tonic position.

Salvador (1977) believes that openness enables speakers to differentiate between singular and plural vowels in EAS, as this openness is always there and it was the first feature that researchers noticed. However, he analysed EAS vowels using Trubetzkoy's binary categories and concluded that the difference between vowels and their open counterparts is one of articulatory tension.

Alvar (1973, map 1696) studies vowel doubling before deleted word-final /s/, with western Almeria and the southern half of Granada being the areas where the phenomenon has been studied the most and where more evidence of vowel doubling has been found. Alvar (1973), García Marcos (1987) and García Mouton (1992) also notice differences regarding vowel doubling: different degrees of openness in verbs and in plurals, such as in the towns that Alvar (1973) identifies as Ma301 (Ronda), Ma402 (Salares), and J101 (Santa Elena); differences between men and women, as in locations J204 (Villacarrillo), Al202 (Contador), Al203 (Oria), and Al200 (Topares); differences depending on age and social background, such as in Al508 (Almeria) and Gr513 (Lujar); and towns where vowel splitting is a recent and imported phenomenon (e.g. Gr200 (Puebla de Don Fabrique)). Alvar (1973, map 1696) shows that the most common way of distinguishing between vowel and vowel plus deleted /s/ in EAS is through vowel opening, although Alvar (1973, map 1696) also shows vowel lengthening, aspiration, and metaphony as relevant

features in some towns. However, Alvar (1973) also noticed that in some towns, vowel splitting is being lost and vowel differences based on vowel quality are being neutralised. García Marcos (1987), for example, noted an increase in the tendency to insert aspiration to mark deleted /s/ on the coast of the province of Granada, which contrasts with Peñalver Castillo's (2006) findings. Peñalver Castillo (2006) found some aspirations as well, but he believed that the most common feature was to delete /s/, especially in younger speakers. Peñalver Castillo (2006) found aspiration mainly in rural areas around the town of Cabra, although García Marcos (1987) believed that [h] preceded by opened vowel had prestige on the coast of the province of Granada, which is why its frequency increases as we go up the social scale. García Marcos (1987) indicated that the only places which showed a different tendency were those with less access to media or schooling, or those places where social prestige was given to solutions that were more common outside of that region (either Castilian [s] or Sevillian [h]).

Alvar (1973, maps 1613, 1620, and 1625) studies the words *zagal* 'kid', *mar* 'sea', and *más* 'more'. In most towns, /al/, /ar/, and /as/ are either reduced to the same vowel following consonant deletion, or *mar* and *más* are distinguished thanks to aspiration, vowel lengthening, or vowel quality. However, in some exceptional cases, the three vowels have different quality following consonant deletion, as in Al507 (Berja). Alvar (1973, maps 1626 and 1629) studies the words *tos* 'cough' and *voz* 'voice'; /os/ and /oϴ/ are neutralised into the same vowel once the final consonant is deleted, although we do not know whether that is due either to *seseo, ceceo,* or to other causes. However, /os/ and /oθ/ are distinguished in some towns even when the consonant is deleted (e.g. Gr303 (Algarinejo), Gr503 (Escuzar), or Al501 (Alboloduy)).

Sanders (1998) studied whether EAS laxing was truly systematic and to what degree, as some factors, such as sociolinguistic variation, can influence the quality and consistency of a phonetic sampling. Sanders (1998) found that the alternation in vowel quality between singular and plural forms in EAS was consistent and phonemic, and that those alternations involve mid and low vowels. However, Sanders (1998) argued that there is limited evidence that native speakers of EAS consistently use vowel laxing to make distinctive contrasts in normal speech. Sanders (1998) asserted that the variation between plural and singular /e/ and /o/ was significant in all contexts, but that in /a/ it was statistically significant either in F1 or F2, depending on the context. Sanders (1998) supports, at least in part, a modified version of EAS vowel doubling.

Jiménez and Lloret (2007) noticed another degree of opening already identified in Navarro Tomás (1938), positing that /l/ and /r/ do not systematically trigger opening of vowels, and that if they do, the vowels are not as open as when they precede /s/ deletion. However, to my knowledge, no further study has been carried out to analyse whether this opening has phonemic value.

In Lloret and Jiménez (2009), the same authors also consider the implications of /x/ deletion and said that obstruents, other than /s/ and /x/, are omitted word-finally as in many other varieties of Spanish without causing vowel opening in the preceding vowel. However, Herrero de Haro (2016b) posits that vowel opening also happens in vowels preceding other deleted consonants, such as /r/ and /θ/, which he analyses acoustically.

Regarding vowel doubling, Lloret and Jiménez (2009) believe that even though *fronting* and –ATR *(advanced tongue root)* are transferred from the omitted /s/ to the preceding /a/, only –ATR is transferred to other vowels in the harmonic process because –ATR is a new category in the system and it can be transferred to other vowels without altering the existing system. Meanwhile, *fronting* already existed in the vowel system and if it were transferred to other vowels, it would alter distinctive information that already existed.

To date, Alvar (1973) is the work with more information on EAS pronunciation and it shows some interesting instances of further vowel doubling. The author presents several cases in which some vowels seem to acquire a phonological value after certain consonants are deleted. Alvar (1973, maps 1532 and 1533) shows the pronunciation of the words *mies* 'grain' and *miel* 'honey'. The maps show that /es/ and /el/ are reduced to the same vowel after /s/ and /l/ are deleted, although the vowel in question varies from area to area. However, in some towns, both vowels are still distinguished once the consonant is deleted; in J101 (Santa Elena) and in Gr301 (Colomera), for example, the vowels have different quality, thus, showing further vowel splitting. In other towns, however, those vowels are distinguished thanks to aspiration.

Alvar (1973, maps 1543 and 1544) studies the words *farol* 'lantern' and *flor* 'flower'. In AL509 (Balerma) and J103 (Bafios de la Encina), the /o/ pronounced after the consonant is deleted has a different quality, which shows a distinction between /o/ preceding deleted /l/ and /o/ preceding deleted /r/. Alvar (1973, maps 1552 and 1553) studies the words *horno* 'oven' and *hoz* 'sickle', and the vowel /o/ before deleted /r/ and before deleted /θ/ have different quality in some towns as well (e.g. Al509 (Balerma) or Al401 (Tahal)). Herrero de Haro (2016b) shows further vowel splitting, with different vowels resulting before /-s/, /-θ/, and /-r/ deletion. Further vowel doubling like this, however, has not been studied to date.

If, as the authors above have claimed, vowel opening has been phonologised, then the question of why that happened is also relevant. Hernández-Campoy and Trudgill (2002) review several studies in which this is explained as a process of functional compensation in which semantically relevant information is preserved following /s/ deletion; however, their position is different. Hernández-Campoy and Trudgill (2002) believe that, unlike other varieties of Spanish, functional explanations are not valid for Southern Peninsular Spanish /s/ deletion. They accept an eight-vowel system in EAS (and in Murcian Spanish), due to the phonologisation of originally allophonic differences but they do not believe this was motivated to compensate for /s/ loss. They support their position by the fact that vowels have become open in cases where plurals can be differentiated from singulars even after /s/ has been lost *(árbol* 'tree' vs. *árboles* 'trees'). Furthermore, the vowel change happens word-medially and word-finally, and the change also occurs following the deletion of other consonants (e.g. *calor* 'heat'). Finally, forms which were distinct before consonant deletion word-finally now are homophonous (e.g. *mar* 'sea', *más* 'more', and *mal* 'bad'), and there are no open equivalents for /i/ or /u/. Hernández-Campoy and Trudgill (2002) believe that if vowel opening were due to functional compensation, then open vowels of /i/ and /u/ would have arisen.

4.1.1.1. EAS vowel system models

The debate regarding EAS vowels has not been limited to the phonological value of vowel doubling, but also to how to represent this vowel system. The different systems proposed for EAS vowel phonemes are explained below.

The first graphical illustration of a vowel system for EAS appeared in Alarcos Llorach (1949), although this was based on the data presented in Navarro Tomás (1938, 1939) (see Figure 1).

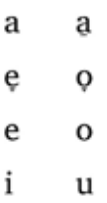

Figure 1. EAS Vowel system posited by Alarcos Llorach (1949) for the data presented in Navarro Tomás (1938, 1939).

Alvar (1955a) posited that the triangular vowel system of Spanish had developed into a

quadrangular one where vowels have two types of timbre, and he considered it necessary to add EAS to those systems of five degrees of openness considered "extremely rare", as seen in Figure 2.

i	u
i̯	u̯
e̯	o̯
e̯	o̯
a	a̯

Figure 2. EAS vowel system posited by Alvar (1955a).

Salvador (1957) also proposed a vowel system for EAS. His system had six degrees of openness (Figure 3) and, at the time of the article, the only language known to have six degrees of openness was Gweabo, a language from Liberia which Trubetzkoy (1949, p. 119) mentioned as a rare example.

Alarcos Llorach (1958) approached the study of EAS vowels from a totally different angle. At that point, linguists had only talked about vowel doubling, but Alarcos Llorach (1958) proposed vowel system doubling. He argued that EAS singular and plural vowels present a similar case to stressed and unstressed vowels; they are both the same phoneme. Alarcos posited that *x* (a co-vowel) makes vowels longer before pause, geminates the following consonant and opens the vowel. Alarcos Llorach (1958) concluded that *x* would be voiceless as it devoices the following consonant; the closest sound to this would be [h]. Alarcos Llorach (1958, 1983) mentioned 10 different vowels, but they belonged to two different systems (see Figure 4).

Thus, Alarcos Llorach (1958) posited a phoneme /h/ in EAS with various pronunciations:

1. [h] voiceless (and sometimes voiced) at the beginning of a word;
2. [h] voiced between vowels;
3. [h] or gemination before stop, nasal, or lateral consonant;
4. Spirant voiceless or semi-voiced consonant before fricatives; and
5. It lengthens final vowels before pause.

Alarcos Llorach (1983) supported the same theory, although he admitted that vowels preceding deleted /s/ were not always longer. However, he continued defending his position that the limitation of contrast between word-final vowels and vowels preceding word-final /s/ deletion to certain positions meant that both vowels belonged to different systems.

Mondéjar Cumpián (1979) and Cerdà Massó (1992) supported the latter system. However, Gómez Asensio (1977) rejected it, as he considered it too schematic and claimed that it did not operate within phonetic reality. Gómez Asensio

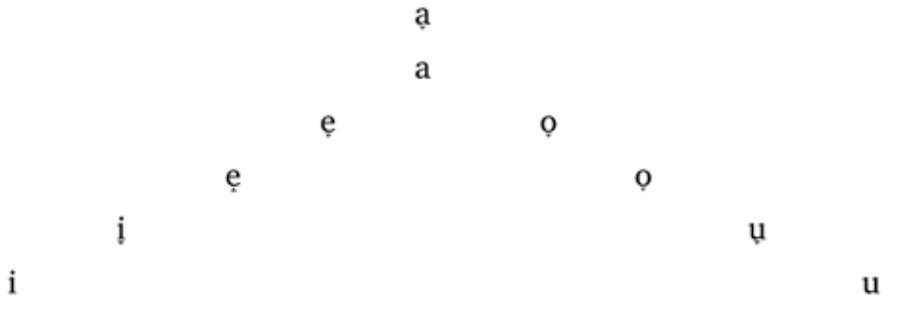

Figure 3. EAS vowel system posited by Salvador (1957).

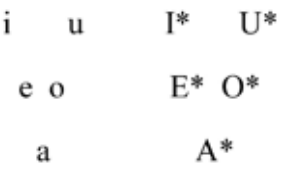

Figure 4. EAS vowel system posited by Alarcos Llorach (1983).

(1977) argued that Andalusian vowels were not always long in plurals, that openness was the relevant distinctive feature, and that vowel quality was a redundant feature. Years later, Alarcos Llorach (1983) still defended the theory posited in Alarcos Llorach (1958) and rejected vowel doubling in EAS, positing that an extra prosodeme distinguished singular and plural EAS vowels.

Contreras Jurado (1975) supported the idea that the EAS vowel system is the same one as in Castilian Spanish, but argued that there was a prosodeme which did not exist in Castilian Spanish (see Figure 5). This prosodeme is used as a numeric marker and it is redundant when there is a hangover of a deleted /s/. When the consonant /s/ disappears totally, the opposition –prosodeme/+prosodeme as numeric marker can be observed in EAS, and vowel closing seems to indicate a tendency to make this numeric prosodeme more effective. The singular/plural distinction is much more effective thanks to this.

According to Contreras Jurado's (1975) hypothesis, vowels in singular EAS words would become less closed in the future, while plural EAS vowels would remain unchanged.

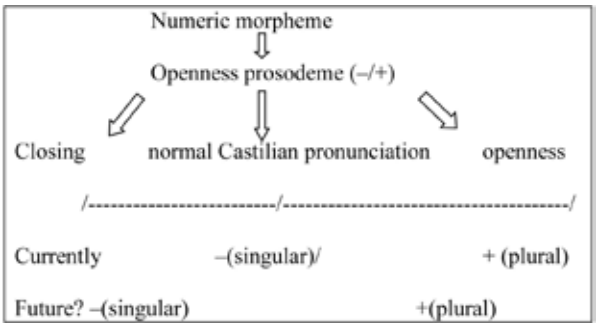

Figure 5. Contreras Jurado's (1975) singular vs. plural scheme for EAS.

Salvador (1977) revised the model presented in Salvador (1957) and concluded that the vowels in *tu* 'your —before sing. noun—' and *tus* 'your —before plu. noun—' are not distinguished, so he removed open /u/ from his 1957 model. However, he asserted that there are nine vowel phonemes in EAS. Salvador (1977) understood that a system with 6 degrees of openness can be very complex, but he considered that there might be other features, such as lengthening, which support such weak differences between vowels. Likewise, Salvador (1977) acknowledged that the *lengthening* which we associate with open vowels in final position could be a general term we use to describe other phenomena which we cannot comprehend (Figure 6).

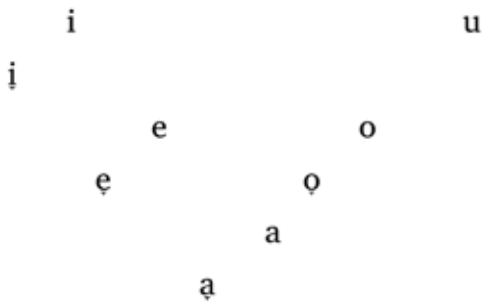

Figure 6. EAS vowel system posited by Salvador (1977).

Gómez Asensio (1977), on the other hand, did not believe that it was possible to explain all the differences found within EAS vowels with the four features which authors had been using until then, so he used generative phonology to analyse these vowels (see Figure 7). Martínez Melgar (1986) had a similar opinion, as she thought that phonemic models cannot explain the vowel system of EAS. Gómez Asensio (1977) supports Salvador's (1957) system, but he decided to add *openness* as a feature to be able to distinguish between all the vowels suggested by Salvador (1957). Gómez Asensio (1977) eliminated redundant

information and changed from a binary system +/- to one with a numerical coefficient (*0* meaning *no feature*, blank meaning *redundant feature,* and a number depending on the intensity of a feature). As a results, Gómez Asensio (1977) was the first author to scale the features of EAS vowels.

These different models highlight the complexity of EAS vowels and illustrate how the debate is not limited just to whether or not vowel doubling exists. Choosing a vowel system which represents EAS vowel doubling accurately proves difficult, but what remains clear is that the triangular vowel system of Castilian Spanish cannot be used to represent EAS vowels.

4.1.2. Vowel doubling in EAS: arguments against

As explained in Navarro Tomás (1938, 1939) and in Rodríguez-Castellano and Palacio (1948a, 1949b), vowel doubling appears in syllable final position preceding /s/ deletion. Some authors, the first being Alarcos Llorach (1949), have focused on this limitation of context to refute vowel doubling. Alarcos Llorach (1949) argued for the importance of considering not only the phonemic inventory of a language, but also the context where each phoneme can appear; however, it would not be until Alarcos Llorach (1958) when he would openly oppose vowel doubling in EAS. Mondéjar Cumpián (1979) supported Alarcos Llorach's (1958) position that five or six levels of openness are too many for a vowel system. These authors claimed that, as vowel doubling is only relevant in certain positions and /a/ opposes open /a/ but not open /e/, then we have two vowel systems, not one. Furthermore, Mondéjar Cumpián (1979) argued that there are two vowel systems as well due to the fact that only open vowels can be long.

Alarcos Llorach (1981, p. 122) explained that the evolution of a system means that some distinctions are lost, but the system comes up with other ways of solving ambiguity, so he did not reject vowel doubling because he did not think that EAS did not mark deleted /s/, but because he thought that EAS marked deleted /s/ differently.

High	i – 6 (ụ) i̱ – 5 i̱ - 4 e̱^{i} – 2 e̱ - 1		u - 6 ụ - 5 ụ̱ - 4 ụ^{o} - 3 o̱^{u} - 2 o̱ - 1
0 low 0 high	e (o̱)		o
Low	e̱ - 1 e̱ - 2 a̱ - 3 ä - 4 ä̱ - 5	a – 1 a̱ - 2 a̱ - 3	o̱ - 1 o̱ - 2 a - 3 a̱ - 4
	Front	0 front 0 back	Back

Figure 7. Gómez Asensio's (1977) representation of EAS vowels.

Alarcos Lorach (1981, p. 123) explained how systems follow the principle of economy and tend to differentiate the highest possible number of phonemes with the minimum number of distinctive features, avoiding isolated oppositions; thus, he deemed a vowel system with 5 degrees of openness as too complex. Furthermore, Alarcos Llorach (1981, p. 127) explained that phonological mutation rarely happens in isolation, and that it normally affects other parts of the system as well, so he had these principles in mind when working on Alarcos Llorach's (1958) theory. However, I believe that if EAS vowel opening is a relatively new phenomenon, as posited in Rodríguez-Castellano and Palacio (1948a), then maybe there has not been enough time for EAS to simplify the system and reduce its phoneme inventory.

The dephonologisation of vowel quality in Latin created a system with five degrees of height and a very small security margin between them (Alarcos Llorach, 1981, p. 217). Differences in quantity turned into differences of quality, but it was difficult to maintain that system and the vowel system of Western vulgar Latin was reduced to four degrees of openness and seven vowels. This might be what made Alarcos think that EAS vowel doubling was too complicated to be a durable system; however, I believe that it is worth noting that EAS is an innovative geolect and its vowel system might not have time to readjust yet.

Alarcos Llorach (1958) and Mondéjar Cumpián (1979) posited that what differentiates *rosca* 'doughnut' and *roca* 'rock' is not the open or closed vowel, but the alteration of the following consonant or [h], thus, ['rohka/ 'rokka] vs. ['roka]. Alarcos Llorach (1958) asserted that in [a+*x*], [e+*x*], etc. *x* can be quantity, openness (quality), tone, etc. therefore, he does not talk about 10 different vowels in EAS, but about 2 subsystems: system /a/, /e/, /i/, /o/, /u/ and system [A*], [E*], [I*], [O*], [U*] (short and narrow vs. long and wide vowels). Thus, Alarcos Llorach (1958) talked about system doubling, not vowel doubling. Furthermore, Contreras Jurado (1975) considers the vowel system of EAS the same as Castilian Spanish, and Cerdà Massó (1992) also defended the possibility of having 10 vowels split into two or more phonological vowel systems in EAS.

Contreras Jurado (1975) also observed that in words like *masa* ['masa] 'mass' and *masas* ['maṣą] 'masses', more than one sound is substituted. Thus, Contreras Jurado (1975) claimed that EAS speakers need the context to distinguish between singular and plural, and that they cannot do this just by opening one vowel. All vowels in a word, or at least the stressed one and the final one, need to be substituted. Herrero de Haro (2016a), on the other hand, claimed that EAS speakers can identify underlying /s/ without the help of contextual elements or vowel harmony, which he supported with the results of two perception experiments.

Contreras Jurado (1975) defended his position adding that, if two sounds of the same language appear exactly in the same phonic context and can be substituted for each other without changing the meaning of the word, these two sounds are allophones of one phoneme; thus, pluralised vowel opening must not be understood as a vowel feature. According to Contreras Jurado (1975), vowel opening in EAS can change the meaning of words without changing the nature of the phonemes, which is why vowel opening belongs to the same group as stress and tone, as its presence or absence does not alter the phonological entity of vowels. Contreras Jurado (1975) also posited that vowel opening is a prosodic feature and affects the word globally, a position also defended by Cerdà Massó (1992). Contreras Jurado (1975) argued that the singular/plural distinction does not lie, in the current state of EAS, in the *non-open vowel phoneme/open vowel phoneme* opposition, but in the opposition *word not affected by the prosodeme of openness/affected word*. For him, the opposition distinguishing singular and plural in EAS was: - openness prosodeme/ + openness prosodeme.

Mondéjar Cumpián (1979) and Alarcos Llorach (1983) considered that not all EAS vowels belong

to the same vowel system, as they do not have a distinguishing value in all the positions where vowels can appear in Spanish. However, Mondéjar Cumpián (1979) thought that [h], which is the last trace of the consonant [-s], has distinctive value in all positions, explaining how [h] is more tense in onset and not as weak as in coda. Despite not supporting vowel doubling, Cerdà Massó (1992) rejected the limitation of the phonological value of plural EAS vowels to final position only, as defended by Mondéjar Cumpián (1979) and Alarcos Llorach (1983). Cerdà Massó (1992) believed that in a word like *horrorosos* 'horrible plu.', EAS speakers do not need to hear the last syllable to know it is plural. He believed that, due to vowel harmony, the first /o/ shows what is going to happen to the other vowels, and that the semantic load of /s/ has been moved to the first syllable, as it happened in French in cases like *des maîtres* 'teachers'. This was also supported by Poplack (1980) for Puerto Rican Spanish.

For López Morales (1984), vowel opening can only have phonological value if it appears as the only plural marker and happens only when we have /s/ deletion; however, he also attested vowel opening before deleted /r/ and /l/. Furthermore, López Morales (1984) studied vowel doubling in the southeast of the province of Granada and concluded that vowel opening in EAS is a phonetic feature, not a phonological one, as there is almost always another element that carries the semantic load of the deleted /s/. López Morales (1984) found numerals, articles, and subject pronouns in 97% of the analysed cases, meaning that vowel opening is a redundant marker of plurality or the subject *tú*. He also found that /s/ is deleted more often when there are other ways of marking deleted /s/; Terrell (1975) reached similar conclusions for Cuban speakers. Herrero de Haro (2016a), however, rejects López Morales' (1984) theory and argues that EAS speakers can identify underlying /s/ without contextual elements.

In an acoustic study, Martínez Melgar (1986) found that F1 and F2 movements from singular to plural are simply a tendency. Some movement happens in most cases, but not in all of them, which is why she considered EAS vowels as phonetic but not phonological variants. Martínez Melgar (1986) did not find vowel splitting in EAS vowels, not even a system of allophones; however, given the existence of tendencies in the movements of vowel formants, she could not be sure that vowel doubling had not existed before. Martínez Melgar (1986) wondered whether EAS vowels show an evolutionary process that tends towards lack of differentiation of plurals, as it happens, apparently, in western Andalusia. Many linguists, such as Ueda (1993) and Torreira (2007), divide Andalusia into an eastern part (where /s/ loss is marked by vowel opening), and a western part (where /s/ loss is marked by [h]). According to Morris (2000), different outputs for /s/ debuccalisation in different geolects can be explained by suppression or redistribution of different markedness and faithfulness constraints.

For Alarcos Llorach (1983), EAS vowels are either projected or non-projected. Projected vowels are more advanced in the mouth and pronounced with the lips more retracted and with *special* tension of the tongue. Alarcos Llorach (1983) believed that that is what differentiates singular and plural EAS vowels, that vowel opening is redundant, and that plural EAS vowels are not phonemes. He also thought that this projected feature of the vowels is what made Navarro Tomás (1938) consider plural /a/ as velar.

Corbin (2006) did not reject vowel doubling explicitly; however, Corbin (2006, p. 27) argued that "there was no significant difference between the formants of vowels in syllables whose codas had been deleted and those in syllables whose codas had not been deleted". Likewise, Carlson (2012) found no consistent qualitative vowel alteration following word-final /s/ deletion in speakers of Andalusian Spanish, although Corbin (2006, p. 27) attested vowel lengthening: "It appears that the crucial factor in determining whether a vowel

laxes is whether or not the coda position of the syllable in the underlying structure is filled."

4.1.3. EAS Vowel harmony

Alonso et al. (1950), the same as Navarro Tomás (1938), identified vowel harmony as a feature of EAS, although they suggested it worked differently. For Alonso et al. (1950), the closing or opening of a vowel only extends across a word to its vowel counterparts (e.g. the first /a/ would open in *patas* 'legs' but not in *patos* 'ducks'). Alonso et al. (1950) also believed that initial unstressed /a/, /e/, and /o/ follow the same changes as stressed vowels and they also argued that stressed vowels are longer in EAS than in Castilian Spanish; Alvar (1955b) also identified vowel harmony, which also happens in Germanic languages. On the other hand, Alarcos Llorach (1958) argued that some vowel opening is due to assimilation, rather than vowel harmony, and considered word-internal vowel opening a non-pertinent variation. Similarly, Contreras Jurado (1975) explained that in plural words, final and stressed vowels (and in many cases all vowels), are more open than in Castilian Spanish. Contreras Jurado (1975) supported the argument that vowel opening in plurals is used by EAS as a plural marker and that this opening is slightly bigger than the one produced by coarticulation. Lastly, Gómez Asensio (1977) and Mondéjar Cumpián (1979) also believed that vowel opening is the distinctive feature for plurals; as Gómez Asensio (1977) pointed out, vowel harmony transfers openness to other vowels, not other features like palatalisation.

Zubizarreta (1979) studied vowel harmony as a set of rules ranked by order of appearance, following a similar process to that used by Gómez Asensio (1977). In her study, Zubizarreta (1979) analysed vowel harmony in Andalusian vowels, describing which vowels undergo phonetic and phonemic laxing, which vowels open as part of vowel harmony, and which vowels let vowel harmony influence other vowels in a word. Jiménez and Lloret (2007) and Lloret and Jiménez (2009) also focused on vowel harmony and they considered it a result of languages attempting to minimise the resetting of articulators (a type of assimilation). However, this would only explain the cases where all vowels harmonise, not those where not all vowels lax. Kaplan (2012) approached this issue as well, and concluded that multiple-ranking analysis explains EAS vowel harmony better than other theories, as it is capable of generating the all-or-nothing patterns of post-tonic EAS vowels, something that other theories fail to do. However, unlike Kaplan (2012), Lloret and Jiménez (2009) believed that there is a similar harmonisation process in words ending in /x/ ([h] in Andalusian Spanish).

Optimality Theory has proved useful to tackle the analysis of EAS vowel harmony, especially in the last decade. Jiménez and Lloret (2007) and Lloret and Jiménez (2009) explained vowel harmony through the concept of "positional (perceptual) markedness," according to which the harmonising feature is attracted to strong positions in the word, as it becomes more perceptible that way. However, it was not until Lloret and Jiménez (2009) when they defined the harmonising feature as "–ATR." Kaplan (2012) presented a similar explanation for vowel harmony in EAS, although he preferred the term "Generalized Licensing" (from Walker, 2011); he adds that the perception of the feature is also increased by repeating the feature as many times as possible. Furthermore, Jiménez and Lloret (2007) believed that the vowels before the stress can either open or not, which I personally believe is governed by a series of sociolinguistic rules.

4.1.4. Vowel lengthening

As with other features related to EAS vowels, quantity has also been widely debated. Rodríguez-Castellano and Palacio (1948a) and Alonso et al. (1950) considered /a/ longer in plural than in singular. Likewise, Alonso et al. (1950) also reported that stressed vowels are always lengthened and longer than their Castilian counterparts. For

Salvador (1957), vowels are longer in plurals and stressed syllables, and /a/, /e/ and /o/ preceding /s/ deletion are more open in stressed than in unstressed syllables. Alarcos Llorach (1958) claimed that a vowel preceding an omitted /s/ is not only more open, but also longer, and he explained this by saying that the gap created by the omission of /s/ is filled by lengthening the vowel or by geminating the following consonant.

On the other hand, Salvador (1977) pointed out that lengthening is neither regular nor exclusive to open vowels; however, Martínez Melgar (1994) claimed that all vowels are shorter before deleted /s/, which contradict what Alarcos Llorach (1958) posited; for Sanders (1998), however, only high vowels are shorter in plural than in singular.

Gerfen (2002) studied vowel and consonant lengthening, and vowel aspiration, and he concluded that there is a relationship between vowel and consonant lengthening: if the ratio of consonant lengthening grows following /s/ aspiration, the degree of vowel lengthening decreases, and vice versa. For Gerfen (2002), gemination of the following onset consonant is a result of word-internal /s/ aspiration, not a consequence of positioning in the word; nevertheless, I believe that gemination also happens as a result of deleting other consonants, as in *apto* [ˈaʰt:o] 'capable'. Furthermore, Gerfen (2002) claimed that the duration of aspiration tends to become shorter as the voiced portion of the vowel becomes longer. Peñalver Castillo (2006) reported something similar in Cabra, claiming that vowels are shorter when /s/ is aspirated than when it is not.

In his study, Gerfen (2002, p. 265) analysed whether consonant and vowel lengthening are correlated, concluding that "the variability in vowel and consonant lengthening is constrained within a less variable vowel + stop temporal target." Furthermore, Gerfen (2002) posited that vowels are significantly longer when /s/ is aspirated only if we consider the period of aspiration after the vowel to be part of the vowel gesture. Gerfen concluded that consonant lengthening is a more robust cue than vowel lengthening in marking a missing /s/ in coda, being the first author to posit that:

> the degree of variation between the phenomena of consonant and vowel lengthening is tightly constrained. Specifically, although there is variation in the degree of gemination and lengthening under s-aspiration both within and across speakers, the results reveal a trade-off relation between the two phenomena. (2002, p. 275)

Campos-Astorkiza (2003), however, found consonant gemination in EAS rather than vowel lengthening.

In her analysis of phonemisation of vowel duration word-finally, Carlson (2012) found an average increase of 24.2% in the duration of vowels preceding deleted /s/. Her sample, however, included 4 EAS and 2 WAS native speakers, so it is not possible to have a specific percentage for EAS alone. According to Carlson (2012), this vowel lengthening allowed participants to distinguish pairs such as *buque* 'ship' and *busque* 'I/he/she looks for –subj–' with a success rate of 79%. These results are similar to those reported in Hammond (1978) for Miami-Cuban Spanish and in Figueroa (2000) for Puerto Rican Spanish, but they contradict Alemán (1977), who does not report any compensatory lengthening in vowels preceding deleted /s/. Likewise, Carlson's (2012) results oppose those presented by Gerfen and Hall (2001), Gerfen (2002), Bishop (2007), and O'Neill (2010), who believe that the cue to recognise word-medial /s/ deletion lies in the gemination of the consonants.

It is interesting to note Hammond's (1978) findings, which claimed that in word-internal vowels, length, not vowel opening, provides Miami-Cuban Spanish speakers with the cues to distinguish between minimal pairs once /s/ has been deleted, an opinion backed by Carlson (2012). Following the *Distinctiveness Condition* proposed by Kiparsky (1982), Carlson (2012)

argues that semantically relevant information tends to be retained, so there must be a mechanism to maintain the information lost in EAS when /s/ is deleted.

4.1.5. Velarisation or palatalisation of /a/

Another widely debated feature of EAS is the quality of /a/. Rodríguez-Castellano and Palacio (1948a) and Navarro Tomás (1938, 1939) asserted that when /s/, /θ/, or /ð/ are deleted, /a/ becomes slightly velarised. Likewise, Salvador (1957) claimed that /a/ is velarised in Cullar-Baza (now Cullar) when it precedes aspirated /s/ plus a velar consonant. He also claims that /a/ can have a slight velar timbre when deleted /s/ is followed by another consonant.

Regarding /a/ preceding /s/ deletion, Navarro Tomás (1938, 1939), Rodríguez-Castellano and Palacio (1948a), Martínez Melgar (1986), Ueda (1993), and Sanders (1998) have maintained that it is velar, as opposed to the descriptions presented in Wulff (1889), Alonso et al. (1950), Alvar (1955b), Alonso (1956), Salvador (1957, 1977), Alarcos Llorach (1958), Zamora Vicente (1960), Llorente (1962), Jiménez and Lloret (2007), and Lloret and Jiménez (2009), who considered it a palatal vowel. However, Alonso et al. (1950) accepted that open /a/ can have a velar aspect before a velar consonant. Alonso et al. (1950) posited that this /a/ is fronted, but still more back than /e/. Interestingly, Jiménez and Lloret (2007) and Lloret and Jiménez (2009) believed that /a/ fronting preceding deleted /s/ acts as a cue to preserve the place of articulation of EAS coronal /s/ but that this feature only transfers to /a/, as /e/ and /i/ are already front vowels and /o/ and /u/ do not adopt this feature. However, unlike Jiménez and Lloret (2007) and Lloret and Jiménez (2009), Herrero de Haro (2016b) believes that all consonants leave a trace of place of articulation on any preceding vowel.

Alvar (1973, map 1697) studied the palatalised solutions for unstressed /a/ preceding deleted word-final /s/ (e.g. *casas* 'houses'). According to this map, /a/ can be palatalised to different degrees (e.g. *casas* [ˈkaˌsaˌʲ]/ [ˈkaˌseˌ] 'houses') and it can be slightly velarised as well (e.g. *casas* [ˈkaˌsaˌˠ]), but the map shows that a palatal solution is more common than a velar one. Martínez Melgar (1994) reported that /a/ tended to be velar in the province of Granada but alveolar in Jaen. She even described some alternation between velar and palatal /a/ within the same speaker. Considering all this, the different velar and alveolar pronunciations of /a/ reported by various linguists might have differed due to the location studied in each case. Gómez Asensio (1977), however, went a bit further and believed that EAS /a/ can be neuter, velar, or palatal.

In a more global sense, Salvador (1977) considered all Andalusian vowels more fronted than their Castilian counterparts; vowels are more fronted when they precede /s/ deletion but plural /e/ will always be more back than /i/.

4.1.6. EAS Vowels: other phenomena

Alonso (1956) was the first researcher to describe an interesting phenomenon regarding /a/[3]. He found that stressed and unstressed word-final /a/ preceding deleted /l/, /r/, /s/, or /ϴ/ was pronounced as an open /e/ and that this opening was more common in women and children, an opinion also supported by García Mouton (1992). Thus, Alonso (1956) found an opposition *vaya* [ˈbaja] 'he/she goes 'subj.-' vs. *vayas* [ˈbaje̯] 'you sing. go 'subj.-' (also reported *vayáis* [baˈjei] 'you plu. go 'subj.-'). He located the phenomenon in a triangle between Genil (Cordoba), Estepa (Seville), and Alameda (Malaga) and he was surprised to see that it was not present in some nearby towns. According to Alonso (1956), that phenomenon was in decline and it had covered a much larger

3 Some of the phenomena discussed in this section have also been reported in other varieties of Spanish; however, these similarities will not be discussed here to prevent diverting from our point of focus: EAS.

area in the past; this was later confirmed by García Marcos (1987), who found traces of it in older speakers and children on the coast of the province of Granada (approximately 150km outside of the area identified by Alonso, 1956).

Rodríguez-Castellano and Palacio (1948a) and Salvador (1957) describe how /je/ can be reduced to /e/ or /i/ in Eastern Andalusia. Rodríguez-Castellano and Palacio (1948a) and Salvador (1957) also found that other diphthongs which had been broken in Castilian Spanish were still present in Cabra and Cullar-Baza, and that pre-tonic /a/ closes into [e] and /e/ closes into [i]; these two articles also show examples where pre-tonic /o/ closes into [u], where /u/ opens into [o], and where /i/ opens into [e]. Rodríguez-Castellano and Palacio (1948a) and Salvador (1957) claimed that two similar vowels are merged into one (as in *Granada* [gra'na]), although Rodríguez-Castellano and Palacio (1948a) argue that that merged vowel in a stressed position is longer than the final /a/ in *mama* 'mum'.

On the other hand, Rodríguez-Castellano and Palacio (1948a) and Salvador (1957) also argued that two adjacent vowels within a word tend to keep their value if one of them is stressed (e.g. *cadera* [ka'eɾa] 'hip'). Salvador (1957) had a comprehensive list of solutions for adjacent vowels in word boundary positions and he also described a tendency to turn diphthongs into hiatuses in his town.

According to Rodríguez-Castellano and Palacio (1948a), there are different options when the vowels belong to different words, such as diphthongs (*ni una* ['njuna] 'not even one') and hiatuses (*cada uno* [ka'un] 'each one'). They might also merge into one vowel, especially if the first vowel is unstressed (*te ha engañado* [taŋga'ɲao] 'he/she has deceived you sing.'; *ese imbécil* [esim'besil] 'that stupid person'). Rodríguez-Castellano and Palacio (1948b) also found metathesis (e.g. *nadie* ['naiðe] instead of ['naðje] 'nobody').

Although less extensively, nasality has also been considered in the study of EAS vowels. Rodríguez-Castellano and Palacio (1948a) briefly mentioned nasality in EAS, although it was Alonso et al. (1950) who first reported phonologisation of vowel nasality in Spanish; they attested word-final /n/ deletion in Albaicin (a neighbourhood in Granada) and posited that the nasality of vowels preceding word-final /n/ deletion distinguished *viene* 'he/she comes' and *vienen* 'they come'. According to Lipski (1986), word-final /n/ is never pronounced [n] in Granada, it is pronounced [ŋ] in 77% of cases and as a nasalised vowel in the remaining 23% of cases. Lipski (1986) claims that in word-final position followed by a word beginning with a vowel, /n/ is pronounced [n] 48% of the time in Granada, [ŋ] in 35% of cases, and as a nasalised vowel in 17% of cases; this phenomenon is also reported in Zamora Vicente (1960, p. 324). This feature demonstrates further similarities between EAS and French, with authors such as Llorente (1962) claiming that French and Andalusian Spanish are the most phonetically developed Romance varieties. According to Alonso et al. (1950), the speech of Granada is also more nasal than Castilian Spanish and even /s/ aspiration in Granada has a nasal timbre. For Zamora Vicente (1960, p. 323), however, all aspirations in Granada (and some in Cordoba, Jaen, and Malaga) have a clear nasal timbre.

To conclude this section on vowels, it warrants pointing out to a different approach to analysing vowel contrast. Alarcos Llorach (1949) proposed basing the description of phonemes not on what they are, but on what they are not (e.g. /p/ is phonemically described against /b/ as *not voiced*. Alarcos Llorach:

> The concept of distinction or difference assumes the concept of contrast, opposition. We cannot distinguish between two things if there is no difference between them ... A phonic characteristic will have distinctive function when it is opposed to another one, this is, when both form a phonic opposition. ... Two distinctive features can be opposed to another two, meaning that one of the oppositions is redundant. However, if in some circumstances the distinctive opposition disappears, then the other one becomes relevant (1981, p. 39) (my translation).

This idea would later be followed by Martínez Melgar (1986), who described EAS vowels as *open* vs. *non-open,* as opposed to *open* vs. *closed*. Regarding vowels, Alarcos Llorach (1949) explained the opposition of Spanish vowels as: 1) gradual and isolated opposition (a/e, a/o, a/i and a/u); 2) proportional and equipollent oppositions (e/o and i/u); and 3) proportional and gradual opposition (e/u, o/i, e/i, o/u). Regardless of which position one supports in the debate about EAS, what has become clear is that much work is still needed to fully understand this variety of Spanish.

4.2. Consonant phenomena

4.2.1. Aspirations in EAS

Von Wartburg (1952, as cited in Alvar 1955b), "the most characteristic and important phonetic change and the one which had more consequences amongst all the ones that happened in the Roman Empire was the one related to final /s/ [deletion]" (p. 287) (my translation) . Alvar (1955b) also argued that the conservation or loss of that /-s/ is what caused the linguistic difference between the Eastern and Western Roman Empires, so it does not seem exaggerated to attribute so many vowel changes to /s/ deletion.

For Rodríguez-Castellano and Palacio (1948a), aspiration is one of the main characteristics of EAS. This is used instead of initial Latin *f* or of /s/, /θ/, and /x/ in coda and in intervocalic position; [h] can also be the realisation of other consonants in coda and various consonants (e.g. /f/) can be aspirated word-initially.

However, Peñalver Castillo (2006) studied the speech of Cabra and claimed that aspiration of initial Latin *f* is almost lost. Jiménez Fernández (1999, p. 45) supported Menéndez Pidal's theory that aspiration of initial Latin *f* followed the sequence /f/→ /h/ → zero, and that it started in the Basque Country and Gascon due to a Basque-Iberian substrate, as Basque did not have /f/. Zamora Vicente (1960, p. 55) supported this evolution sequence with a Castilian document from 863 which shows that initial Latin *f* was already aspirated at that time. Rodríguez-Castellano (1952) asserted that words like *hacha* 'axe' and *hambre* 'hunger' maintain the feminine article in Cullar-Baza, as the initial *h* is still pronounced and we do not have the avoided [a 'a] sequence.

According to Mondéjar Cumpián (1979), the maintenance of word-initial /h/ is the only case where Andalusian is less phonetically evolutioned than Castilian Spanish and it is the only archaic phonetic feature of Andalusian Spanish. Jiménez Fernández (1999, p. 46) explained how after [h] was common in the North, it became established in the South, where it remained despite being lost in northern Spain. Jiménez Fernández (1999, p. 47) then described how it appeared in areas of Latin America (it was taken there in the sixteenth century), and posits that the lack of [h] for initial Latin *f* in Eastern Andalusia could be due either to the fact that the area was repopulated by people from areas where [h] had been lost or because the area is further away from Seville, and from its norm. As Jiménez Fernández (1999, p. 48) explained, [h] is used at the beginning of words which come from Latin, such as *farina* 'flour'; however the /f/ was maintained in words introduced later (e.g. *fuente* 'fountain' or *fuerte* 'strong'), and it is normally followed by /we/ or /je/.

Regarding /s/ aspiration, it is worth noting that Alvar (1955b) has explained how the Andalusian tendency to drop /s/ in coda was already a feature in Latin in Malaga and Seville in the second century. In the seventh century, this was documented and considered something vulgar, which suggests that syncope/apocope of /s/ could be much older than initially thought.

Rodríguez-Castellano and Palacio (1948a) described EAS aspiration as a laryngeal or laryngopharyngeal sound; nevertheless, they accepted the terms bilabial, dental or alveolar aspiration to show that the aspiration is assimilated to the

bilabial, dental, or alveolar character of the following consonant. They believe, however, that the small differences perceived are due to the intensity of the friction, not to the place of articulation. Salvador (1957), Tejada Giráldez (2012), Rodríguez-Castellano and Palacio (1948a, 1948b), Zamora Vicente (1960, p. 319) and Zubizarreta (1979) also supported that /s/ aspiration assimilates the place of articulation of the following consonant.

This type of assimilation is not rare. Word-medial /s/ assimilates to the next consonant in Old Latin and Pali, while in Ancient Greek, Medieval French and Norman French /s/ was assimilated to the following consonant and then it was lost and the previous vowel lengthened (Alvar, 1955b). This sequence of events seems to be in operation in EAS as well.

Rodríguez-Castellano and Palacio (1948a) believed that the aspiration, at least at some point, was voiceless, as there is devoicing of consonants preceded by aspirated /s/ (e.g. *dos dientes* [doˌ$^{\Theta}$ˈΘjẹnteˌ] 'two teeth'). The aspiration can also become nasalised, and it is stronger the lower the level of instruction the speaker has and in more informal registers (Salvador, 1957). Alvar (1955b) believed that the pronunciation of /s+bilabial/, as /f/ in Valais (Switzerland), was another example of the same phenomenon. Rodríguez-Castellano and Palacio (1948b) also analysed the different results of /s/ aspiration before consonants (e.g. *desván* [de$^{\phi}$ˈɸan] 'attic'; *obispo* [oˈβi^{hp}po] 'bishop'; *usted* [u^{h}ˈte] 'you sing. formal'; *muslo* [mu^{l}ˈlo] 'thigh'; *desgranar* [(d)e^{hx}graˈna] 'to dekernel'; and *escoba* /e^{h}ˈkoβa/ 'broom'), pointing out that something similar happened in French when /s/ was lost before /t/ in the twelfth century, as in *tête* 'head'. Alvar (1955b) asserted that /s/ is maintained in Provenzal, although some varieties drop it in final position. Those different results of /s/ aspiration fall within the different solutions that Mondéjar Cumpián (1979) identified for /s+Consonant/: [hC], [hCC], [CC], and [C].

Salvador (1957) described some assimilations in detail: in /s+voiceless stop/, the aspiration assimilates part of the place of articulation of the voiceless stop; /sg/ becomes [x] (e.g. *es gordo* [eˈx:orðo] 'he is fat'); /sb/ becomes [f] (e.g. *las botas* [laˌˈf:oṭaˌ] 'the boots'); and /sd/ becomes [θ] (e.g. *los dedos* [loˌˈθ:eḍoˌ] 'the fingers'), although other intermediate solutions are also possible. Furthermore, Alvar (1955b) explained how in /s+voiceless fricative/, /s/ assimilates the place of articulation of the fricative; in /s+nasal/, /s/ is nasalised and assimilated to the place of articulation of the nasal; and, finally, /s+l/ tends to result in [ll] ([l:]). Alarcos Llorach (1958) did not provide specific examples of these alterations, but he represented them in a scheme that explained that /s/ deletion can open and lengthen the preceding vowel, and it can also geminate and modify the following consonant.

More recently, Torreira (2007) also studied /s+voiceless stop/ and found out that in Andalusian Spanish, voiceless stops are consistently post-aspirated when they are preceded by aspirated /s/. He argued that "post-aspiration should be considered as a potential perceptual cue of /s/ aspiration," (p. 70) and believed that postaspiration could possibly lead to a new category of voiceless stops in Andalusian, as it occurred in Pali. Torreira (2007) reported post-aspiration in Eastern and Western Andalusian Spanish, although it is stronger in the latter. Finally, although he could only demonstrate this for /st/, he found evidence of a similar situation for /sk/ and /sp/. Ruch and Harrington (2014) also studied post-aspiration and concluded that it serves as a cue to identify underlying /st/. In EAS, younger speakers have shorter pre-aspirations and longer post-aspirations than older speakers, but these differences are not as noticeable as the ones found in western Andalusia. Furthermore, Ruch and Harrington (2014) reported a trading relationship between oral closure duration and post-aspiration, which they believe indicates a sound change.

For Rodríguez-Castellano and Palacio (1948b), coronal /s/ was always pronounced except in

sporadic cases, such as in word-internal codas preceding a consonant and in word-final position, as in those cases they noted an aspiration, usually voiceless.

In word boundaries, Salvador (1957) found the following solutions: aspirated /s/ does not appear before words containing /x/; /s+voiceless stop/ tends to become an aspiration brought towards the place of articulation of the stop, and the aspiration can be lost and /s/ marked by vowel opening and tensing of the following consonant, as it happens in /s+fricative/ or in /s+affricate/; /sb/, /sd/ and /sg/ behave as in word-internal position; /s+nasal/ results in total loss of aspiration before /m/ and a very nasalised short aspiration before /n/; and /sl/ results in [ll] ([l:]). Salvador (1957) believed that /s/ was aspirated in word-internal coda and either aspirated or deleted in word-final position. Some years later, Lipski (1986) studied the pronunciation of /s/ in various contexts in Granada and found that /s/ is hardly ever pronounced [s] in coda, but is often pronounced [h] or deleted. Alvar (1955a) had also noticed how the aspiration of /s/ caused a whole range of possibilities in /s+consonant/, many of them similar to the ones found around Europe, such as the pronunciation of /st/ as [ht] in Fribourg and Vaud.

Likewise, Alvar (1955b) describes how in Latin, final /s/ used to be pronounced if the next word started with a vowel, as it happens in French now. In Bergamasco, /s/ tends to be aspirated when it becomes a final consonant due to the loss of a vowel, and in Brazilian Portuguese, /s/ is also lost in the final syllable of plural words. Moreover, aspiration of /s/ in articles also happens in Armenian. In some areas, Provenzal /s/ is substituted by aspiration before any consonant, as in Bergamasco (e.g. *vespa* ['vehpa] 'motor-scooter').

According to Rodríguez-Castellano and Palacio (1948b), the highest degree of assimilation is reached when /s/ precedes a labial, dental, or velar consonant, and the process seems to be more advanced if the following consonant is voiced. Alvar (1955b) added that within voiced consonants, the process must have affected labial and velar consonants first, then dentals. Rodríguez-Castellano and Palacio (1948b) believed that this was also the case in French, where /s/ was lost first before voiced than before voiceless consonants and where the vowel preceding deleted /s/ also opens and is longer. Alvar (1955b) also explained how in Latin, the omission of /s/ started to appear first before voiced consonants. For Rodríguez-Castellano and Palacio (1948b), the most advanced version of the phenomenon can be heard when /s/ is followed by a voiceless velar (e.g. *casco* / 'ka^{k}ko/ 'helmet'). Rodríguez-Castellano (1948b) believed that with this tendency to omit consonants in coda, in a few years Andalusian Spanish would have lost all consonants in that position, although this has not been the case, yet. Alvar (1955b) also put this Andalusian phenomenon in connection with other languages: he said that aspiration of /s/ in word-final position is another feature of Sanskrit; /s/ is also omitted before a pause or vowel in Armenian; and in old Slavic /s/ is neutralised in polysyllables. Furthermore, insular Celtic lost that /s/ at the latest in the sixth century and Gallic was losing it when the Roman invasion took place.

The realisation of /s/ varies depending on sociolinguistic factors. Salvador (1957) found that /s/ deletion and vowel opening was only present in women under 25; in women between 25 and 30 years of age, /s/ appeared at times but the loss of /s/ was more common; in women between the ages of 30 and 40, loss and conservation of /s/ alternated and they appeared with equal frequency; /s/ was more common in women over 40; and loss of /s/ was sporadic in women over 60 years of age. These pronunciations back Salvador's (1957) theory which posits that vowel doubling was an emerging feature of speech in the area. Alonso (1956) argued that in the area later studied by Salvador (1957), there is conflict between two systems, a new invading one, spoken by men and of an Andalusian type, and one being lost, of

a Castilian type, preserved amongst women. This view of complete /s/ deletion as a spreading phenomenon was also backed by Peñalver Castillo (2006). Salvador (1957) found three older ladies who did not have *yeísmo* and maintained /s/ and Peñalver Castillo (2006) found traces of a maintained /s/ in Cabra in 2% of speakers. Peñalver Castillo (2006) claimed that speakers with a higher socio-cultural level preferred deleting /s/, while speakers from lower socio-cultural levels preferred aspiration. Tejada Giráldez (2012) also analysed linguistic factors in the pronunciation of /s/ in coda by speakers with a high socio-cultural background from the city of Granada. Tejada Giráldez (2012) reported that the most common realisation word-finally was the /s/ deletion preceded by vowel opening and she believed that coda /s/ pronunciation was determined by sociolinguistic forces.

Tejada Giráldez (2012) concluded that speakers of high socio-cultural levels in the city of Granada present the following percentages for each realisation of word-final /s/: 1.4% for [s]; 24.5% for [h]; and 70.5% for /s/ deletion. Tejada Giráldez (2012) reported a tendency towards aspiration of /s/ word-internally and towards elision of /s/ word-finally. Furthermore, Tejada Giráldez (2012) argued that speakers of higher socio-cultural levels geminate consonants following /s/ deletion in 1.9% of cases and pronounce [h] plus gemination 1.7% of the time. For Tejada Giráldez (2012), social variables (e.g. age), have an effect on the preferred realisations in each case; maintenance of /s/ and aspiration increase with the age of the speaker; however, gemination and elision are lower the older the speaker is.

García Marcos (1987) believed that the loss of /s/ was a change originated in low sociolects. García Marcos (1987) found that lengthened vowel followed by [h] was more common in high sociolects, likewise, lower sociolects preferred an open and lengthened vowel. García Marcos (1987) and García Mouton (1992) also pointed out a tendency in men for more recent solutions: [h], [s], or [h] following an open and lengthened vowel.

Another unsettled debate is the one regarding when EAS /s/ aspiration first emerged. Menéndez Pidal (1940) presented an example in which Christopher Columbus's son (raised in Cordoba, where EAS is spoken) had written *Sophonisba* as *Sofonifa*. For Menéndez Pidal (1940), this is a graphic representation of the EAS pronunciation /sb/ → [f] and he considered this the oldest documentation of /s/ deletion in Spanish, dating EAS /s/ deletion to the beginning of the sixteenth century; Alvar (1955b) and Zamora Vicente (1960, p. 321) also supported this. However, Mondéjar Cumpián (1979) believed that /x/ aspiration started after the seventeenth century and that /s/ and /θ/ aspiration started in Andalusia after the eighteenth century, with the aspiration then spreading to the groups /sg/ and /θg/. For Jiménez Fernández (1999, p. 52), the aspiration of offset /s/ started in the eighteenth century, although he believed that the aspiration of Castilian /x/ started in the sixteenth century; Jiménez Fernández (1999, p. 53) pointed out how the pronunciation of /x/ as [h] has extended more socially and geographically than initial Latin *f*. Peñalver Castillo (2006), for example, explained how /x/ tends to be an aspirated pharyngeal consonant in Cabra. Jiménez Fernández (1999, p. 52) explained the aspiration of Castilian /x/ in Andalusia as a result of merging /ʃ/ with the sound used for initial Latin *f*.

Finally, another phenomenon related to aspiration is *heheo* (pronouncing word-initial or intervocalic /s/ as [h]). For Rodríguez-Castellano and Palacio (1948b), *heheo* only appears in intervocalic position, creating *sí señor* [si heˈɲo] 'yes, sir' and *el señor* [el seˈɲo] 'the gentleman'. This could have been the case then, but the situation is different now; I have heard multiple EAS speaker friends and relatives (and even myself on certain occasions), using *heheo* word-initially (e.g. *sí* [hi] 'yes'). Interestingly, a similar phenomenon is reported in the Nice area, in Ancient Greek, and in Irish (Alvar, 1955b).

4.2.2. Seseo and ceceo

Alonso et al. (1950) reported *seseo* (pronouncing /Θ/ as [s]), in Granada even in speakers from high socio-cultural backgrounds and, in Albaicin, men use *ceceo* (pronouncing /s/ as [Θ]), and women *seseo.* Peñalver Castillo (2006) claimed that *seseo* is the norm in Cabra, although speakers of higher socio-cultural levels, especially under 50 years of age, tend to distinguish and *distinción* is more common in men. Zamora Vicente (1960, p. 304) explained how Arias Montano (b.1527) described how confusion of *s, z,* and *ç* appeared in Seville between 1546 and 1566, although Zamora Vicente (1960, p. 305) believed that Montano was talking about a small minority and that the change had happened earlier in the lower classes. Zamora Vicente (1960, p. 305) posited that the lack of *distinción* first affected Seville and then the coastal south of Andalusia. Zamora Vicente (1960, p. 305) proved that in 1651 *distinción* was the old custom, and *ceceo* was the norm for western Andalusia. Jiménez Fernández (1999, p. 24) believed that *seseo* and *ceceo* appeared at the end of the sixteenth century.

There has also been some sociolinguistic variation reported regarding *seseo* and *ceceo*. Garía Mouton (1992) identified *ceceo* in men from low socio-economic backgrounds in Malaga, but *seseo* in women and men from high socio-cultural backgrounds. García Mouton (1992) also noticed further differences in an area of Jaen, where people have *ceceo* in the countryside and *seseo* in the city but women and older men present *distinción*. However, to my knowledge, a study on the spread of *seseo* and *ceceo* in Eastern Andalusian has not been carried out since Alvar (1973).

4.2.3. Confusion of /r/ and /l/

For Rodríguez-Castellano and Palacio (1948a), word-initial EAS /l/ and /r/ are similar to their Castilian counterparts but with less muscular tension, and in word-final coda they are very relaxed and weak; they hardly touch the palate and are more like fricatives.

Alonso et al. (1950) claimed that alternation of /l/ and /r/ varied significantly, although it was more constant in word-final position. For Salvador (1957), /r/ and /l/ in word-final position is pronounced as a relaxed /l/, as in *mujer* [muˈxe̞l] 'woman'), and *la mujer es* [la muˈxe̞l e̞ː] 'the woman is', but *mujeres* [mu̟ˈxe̞ɾe̞ː] 'women'. However, for Rodríguez-Castellano and Palacio (1948b), /l/ is pronounced [r] in word-final posision is pronounced. Salvador (1957) also noticed that /l/ and /r/ before /t/ or /d/ tend to be [ɹ], but they can also be [ˡɪ] or [l]. He believed that [ɹ] is more common before /θ/, and that [l] is preferred before /s/, but that /rn/ is never substituted by [ln]. Rodríguez-Castellano (1952) also encountered this phenomenon in Cabra and claims that in *el* 'the sing. masc.', *al* 'to the sing. masc.', and *del* 'from the sing. masc.' /l/ is pronounced [r]. For Zamora Vicente (1960, p. 314), neutralisation of /r/ and /l/ happens in coda but not in onset; /l/ is not altered when it is followed by a vowel, *farol* [faˈɾor] 'lantern', but *faroles* [faˈɾoles] 'lanterns'. Zamora Vicente (1960, p. 316) and Jiménez Fernández (1999, p. 63) presented examples from this confusion registered from the twelfth century, such as the surname *Álvarez* written *Árbarez* in Toledo in 1161.

Navarro (1938, 1939) identified /l/ and /r/ deletion in word-final position; nevertheless, Salvador (1957) defended the notion that these were still not deleted in Cullar-Baza, but pronounced very weakly. Alvar (1973, map 1699) studied the pronunciation of stressed /a/ preceding deleted word-final /l/ or /r/, and the map showed that the only areas in Andalusia where those two consonants were not deleted were the border of Granada with Almeria, northeastern Jaen, the border of Almeria and Granada with Murcia, and in a few towns in northern Cordoba; in other various locations, those two consonants are not deleted very frequently.

Rodríguez-Castellano (1952) explained how final /r/ in infinitive is assimilated to the initial /l/ of enclitic pronouns. There are three variations of

this: /r+l/ → [ʝ] (e.g. *comerlo* [koˈmeʝo] 'to eat it'), found amongst older people in Doña Mencía; /r+l/ → [ʰlˡ] (e.g. *comprarlo* [komˈpraʰlˡo] 'to buy it'); and /r+l/→ [l] (e.g. *hacerlo* [haˈselo] 'to do it'), pronunciation also recorded in Jiménez Fernández (1999, p. 62). Rodríguez-Castellano (1952) also found complete /r/ deletion in cases like *matarme* [maˈtame] 'to kill me' and *decirte* [deˈsite] 'to say to you'. On the other hand, for Jiménez Fernández (1999, p. 62), /rl/ can also be pronounced as [ll] (e.g. *decirlo* [deˈθillo] 'to say it'). I believe, however, that /r/ neutralisation in these instances without modifying the preceding vowel or consonant is only found in lower sociolects.

Salvador (1957) reported /rn/ pronounced as [ɹn] and as an intermediate sound [ʲn], which he believed is the first step before assimilation. The assimilation process is even more developed in /rl/, with the solutions [ˡɹ], [ˡrl] and [ll]. However, Wulff (1889) already documented [ˈkanne] for *carne* 'meat', and [kannisеˈɾia] for *carnicería* 'butcher's'.

4.2.4. Yeísmo

Salvador (1957) reported *yeísmo* (pronouncing /ʎ/ as [ʝ]), in Cullar-Baza (Granada), as a recent phenomenon there. Salvador (1957) found three older ladies who did not have *yeísmo* and who maintained /s/; nevertheless, he did not find /ʎ/ in any male speakers. Likewise, Zamora Vicente (1960, p. 312) reported that in some places, the distinction /ʎ/ vs. /ʝ/ was maintained by women. This supports the claim that women's speech is more normative than men's (e.g. García Mouton, 1992; Cepeda, 1990; and Calero, 1990). García Mouton (1992) theorised that in some places, women's speech is more archaic because that is what the norm says, but in cities it is more modern because the prestigious norm of the city is innovative, theory also supported by Cortés Rodríguez (1990).

A few years later, Peñalver Castillo (2006) would report *yeísmo* as the norm in Cabra, which contrasted with Alvar's (1955a) and Llorente's (1962) findings of lack of *yeísmo* in the northeast of the province of Granada. Zamora Vicente (1960, p. 311) found lack of *yeísmo* in parts of the provinces of Huelva, Granada, Seville, and Jaen, and in smaller areas between Cadiz and Malaga. Llorente (1962) found that /ʎ/ was maintained mainly in the surroundings of the Guadalquivir river and in areas closer to Portugal.

Zamora Vicente (1960, p. 309) argued that Andalusian *yeísmo* is older than the one found in Madrid, or at least it was considered Andalusian before it was known in Madrid. It is worth mentioning that some intermediate sounds between /ʝ/ and /ʎ/ have been reported (Rodríguez-Castellano and Palacio, 1948a). A detailed account of the spread of *yeísmo* across Andalusia as well as information on how /ʎ/ and /ʝ/ are pronounced across the region can be found in Alvar (1973, map 1703).

4.2.5. Gemination

Schuchardt (1881) was the first author to report gemination in EAS (e.g. *este* [ˈeᵗte] 'this sing. masc.', *casco* [ˈkaᵏko] 'helmet'), and this would not be reported again until Rodríguez-Castellano and Palacio (1948a). Later on, Alvar (1955b) would also identify this feature, which he explained as a phenomenon also found in Greek, where /s/ was aspirated in the sequence /sm/ and the final outcome became [mm].

Gerfen and Hall (2001) were the first ones to analyse other aspiration phenomena apart from word-final /s/. Gerfen and Hall (2001) thought that as aspiration can occur with any obstruent in coda in EAS, not just in /-s/, we could have new homonyms in EAS, such as *casta* /ˈkasta/ 'cast' and *capta* /ˈkapta/ 'he/she captures' being pronounced [ˈkaht.ta]. However, Gerfen and Hall (2001) proved that that contrast is not totally neutralised, as they found that there is a "subtle yet consistent production pattern distinguishing forms derived from an underlying /s/ and those derived from an underlying voiceless stop (/p/ or

/k/)" (p.2), which Bishop (2007) would also support later on. Gerfen and Hall (2001) found that "aspirating an /s/ results in a longer duration of aspiration, while aspirating a /p/ or /k/ results in more medial consonant gemination" (p. 5), which coincides with Bishop's (2007) findings. However, Gerfen and Hall (2001) also found variation between the duration of vowels preceding deleted /s/, /p/, or /k/, so they did not find any significant difference between the total duration of words with aspirated /s/, /p/, or /k/. Gerfen and Hall (2001) concluded that aspiration occurs with all coda obstruents and that it causes aspiration of the vowel and gemination of the following consonant. However, a preliminary study of data I have gathered in western Almeria suggests that deletion does not affect /l/, /r/, and /n/ in word-medial coda, at least not in all contexts.

Campos-Astorkiza (2003) studied EAS lengthening using Optimality Theory and she saw lengthening as a compensatory feature. However, she found consonant gemination rather than vowel lengthening. Campos-Astorkiza (2003) considered gemination a way of keeping the same number of elements as the input and believed that this "repairs a banned structure deleting the features of the targeted consonant while keeping the same number of input segments" (p. 2) . This concept was later also studied by Carlson (2012). Furthermore, quoting Wilson (2001), Campos-Astorkiza (2003) said that deletion processes in biconsonantal clusters consistently delete the first consonant across different languages. Campos-Astorkiza (2003) concludes that "compensatory lengthening arises as a device to maintain the same number of segments as in the input" (p. 10).

Bishop (2007) also studied gemination in EAS and he concluded that the length of a stop consonant following word-medial /s/ aspiration, but not the aspiration itself, acts as "a strong, disambiguating cue to listeners in making phonemic decisions as to an underlying coda" (p. 1765). This is in line with the findings reported by Gerfen and Hall (2001), who have also supported phonemisation of gemination. I believe that this word-medial phonemisation can be extended to other contexts, as we would have the same case in word boundaries (e.g. *las casas* 'the houses'). For Bishop (2007), this incomplete neutralisation is characterised by durational differences of less than 15 or 20 milliseconds. Bishop (2007) admitted that this difference is much smaller than anything assumed to represent linguistic contrast; however, he explained how these differences are consistent in each of the analysed underlying contrasts and that there are cases in German and in Dutch where linguists have found that such small durational differences can be used by native listeners to distinguish between neutralised segments.

As Bishop (2007) explained, other works, such as Gerfen and Hall (2001) and Gerfen (2002), had studied how duration differences in /s/ aspiration represent a case of incomplete neutralisation; nevertheless, Bishop (2007) provided the first analysis of the perceptual consequences of such durational differences. Bishop (2007) asserted that increasing the closure duration is a cue to underlying /p/, as it made more people perceive the word *hasta* 'until' as *apta* 'capable'; however, increasing the length of aspiration had no effect on the judgment of the listeners. The results presented in Gerfen and Hall (2001), Gerfen (2002), Bishop (2007), and O'Neill (2010) showed that the cue to recognise word-medial /s/ deletion lies in the gemination of the consonants, giving gemination a more important role than the secondary one given to it by earlier researchers (e.g. Mondéjar Cumpian, 1979).

O'Neill (2010) also analysed gemination related to /s/, /p/, and /k/; nevertheless, his analysis had a different approach and focus to the ones in Gerfen and Hall (2001) and Bishop (2007). O'Neill (2010) studied the phonetic cues that speakers of Andalusian Spanish use to distinguish between pairs such as // /V/ +/s/+ /p, t, k/ + /V/ // (VsOV), as in *costa* 'coast', and // /V/ + /p, t, k/ + /V/ // (VOV), as in *cota* 'level'. O'Neill (2010) concluded that the difference between VsOV and

VOV is never neutralised, and that the difference between them does not lie, at least mainly, in the presence of aspiration before the stop, but in the pronunciation of the stops, given that in one third of the cases there was no aspiration before stops. In EAS, stops in VsOV are always voiceless, more aspirated and longer, and in VOV, stops are not aspirated and they are voiceless only in 13% of cases, voiced in 69% of cases, and pronounced as approximants in 19% of cases. As O'Neill (2010) explained, this last pronunciation of stops as approximants means that the contrast [p, t, k] vs. [ß, ð, ɣ] can be neutralised in 12.5% of cases. O'Neill (2010) also claimed that [ß], [ð], and [ɣ] are pronounced as approximants in 66% of cases and deleted 34% of the time, with men showing a stronger tendency to delete approximants and voice voiceless stops. O'Neill (2010) concluded that there can be a great degree of variation in the pronunciation of consonants in VsOV and VOV in Andalusian Spanish; however, the phonetic cues that distinguish those two pairs in EAS seem to be aspiration, voicing, and the length of the stop.

Regarding gemination, Mondéjar Cumpián (1979) presented an interesting view: he believes that vowel opening carries the semantic load of deleted /s/, although he argued that in pairs like *pisto* 'ratatouille' and *pito* 'whistle', the semantic load is carried by gemination, which he considered to be biphonemic.

4.2.6. EAS consonants: other phenomena

In this section, I will deal with EAS consonant phenomena not covered in Rodríguez-Castellano and Palacio (1948b) claimed that in word-final position before a consonant, /l/ is pronounced [r]; nevertheless, when the following consonant is /n/, /r/ is aspirated and nasalised, with the final product being something between a nasal aspiration and a geminated [n]. Rodríguez-Castellano and Palacio (1948a) also believed that /n/ in the Cabra region has no alveolar character, but a weak velar one; Zamora Vicente (1960, p. 324) also said that /n/ can be velarised in Andalusia.

Rodríguez-Castellano and Palacio (1948b) expanded the work presented in Rodríguez-Castellano and Palacio (1948a) and they focused on the consonants of Cabra. The authors described how initial /f/ is only altered before /w/ (e.g. *fuente* [ˈhwente] 'fountain'), and they also found that the neighbouring town palatalised /n/ into [ɲ] as in Leonés. Salvador (1957) also mentioned [ŋ] in coda in Cabra and the area of Cullar-Baza and found /nj/ merged in [ɲ], as in *poniéndose* [puˈɲendose] 'putting something on'.

In word-initial position, /d/ is only omitted in *donde* 'where', and Rodríguez-Casellano (1952) found that intervocalic /d/ deletion causes changes in the conjugation of verbs (e.g. *ayudo* [aˈjuo] 'I help'; *suda* [ˈsua] 'he/she sweats'). According to Jiménez Fernández (1999, p. 70), the loss of intervocalic consonants is registered from the sixteenth and seventeenth century as in [keˈdao] for [keˈdaðo] (*quedado* 'stayed') in the Cancionero of Pedro del Pozo (1547). According to Jiménez Fernández (1999, p. 70), [ð] is the most frequently deleted consonant in intervocalic position, followed by [ß], [ɾ] and [n].

Rodríguez-Castellano and Palacio (1948b) accepted that /n/ is very relaxed, but they argued that it is the only consonant which is not ommitted. Likewise, /d/, /n/, and /l/ are the initial voiced consonants that are less influenced by aspiration. Rodríguez-Castellano and Palacio (1948b) report that, in *los dientes* [loθˈðjẹntẹ] 'the teeth', [ð] is fronted and slightly devoiced and that in las nueras [la^{h} ˈnwera^{h}] 'the daughters-in-law', /n/ is not modified and aspirated /s/ is maintainted and heavily nasalised and semi-voiceless. Equally, /l/ is not altered by a previous aspirated /s/ and this is maintained usually as a simple aspiration, more or less assimilated in some cases. Rodríguez-Castellano and Palacio (1948b) were also the first authors to report that /s/ is not aspirated when a word already

has another aspirated sound, as in *los ojos* [los ˈoho] 'the eyes', which is due to dissimilation.

Assimilation is also very important to understand EAS. Alarcos Llorach (1981, p. 241) explained how common word-internal consonant clusters were reduced in Latin through assimilation, as in *ipse* → *isse*. Alarcos Llorach (1981, p. 243) also explained that some intervocalic voiced stops turned into fricatives in Latin, voiceless consonants were voiced, and geminated consonants were simplified, in this exact order. I believe that these changes are what EAS is exhibiting.

Alonso et al. (1950) reported frequent examples of [v] in Granada (e.g. *fiebre* [ˈfjevre] 'fever'), but these do not appear regularly, not even within a single speaker, and Granada speakers seem to lose it after being away from the city for some time. For Salvador (1957), [v] is a result of aspirated /s+b/ in Cullar-Baza, but not in other positions.

Salvador (1957) considered word-final /d/ deletion older than /s/ deletion word-finally, although the vowel preceding deleted /d/ is not altered. Despite this, he claimed that speakers from high socio-cultural levels pronounce *verdad* 'truth' as [beˌˈðaˌ̯]. Salvador (1957) also argued that the distinction between /s/ and /θ/ is neutralised word-finally in EAS, although this was challenged in Herrero de Haro (2016b).

In the present paper, we have seen multiple examples of how phonologisations are usually accompanied by a desphonologisation that causes it and /n/ deletion could be considered another example of this. Alarcos Llorach (1981, p. 135) explained how phonological fusion changed Old French vowel + /n/ into nasalised vowels, which has also been identified in EAS. Zamora Vicente (1960, p. 324) and Jiménez Fernández (1999, p. 72) described nasalisation of Andalusian vowels preceding /n/ deletion in coda (a phenomenon registered in the neighbourhood of Zaidin, Granada). Alvar (1955b) described how nasalisation of vowels also happened in Latin after /m/ deletion and it happens with any nasal in Sanskrit. However, Alvar (1955b) also claimed that in some parts of Andalusia and in the Canaries, this nasalisation has been lost, which represents a more advanced stage in this evolution.

The fricativisation of /tʃ/ is another phenomenon that EAS has in common with French. Zamora Vicente (1960, p. 313) claimed that /tʃ/ is pronounced [ʃ] in Granada and the surrounding areas, in the south of Seville, in Cadiz province, in western Malaga and on the coast of Almeria close to the capital, with /tʃ/ being maintained in the rest of Andalusia. However, Jiménez Fernández (1999, p. 69) and Melguizo Moreno (2007) thought that [ʃ] was being lost to [tʃ] in Granada. In her sociolinguistic study, Melguizo Moreno (2007) reported that, although very common in the 1950s, fricativisation of /tʃ/ is now stigmatised in Granada and she asserted that [ʃ] is found mainly word-initially and almost exclusively in men from low sociolects. According to this study, [ʃ] is more common in older men, although it can also appear in men between 25 and 54 years of age; in the female population, it can also be found amongst older women with medium level of instruction. Other socio-linguistic studies (e.g. Villena Ponsoda et al., 2003; Hernández-Campoy and Villena Ponsoda, 2009) have analysed the sociolinguistic forces at play in EAS and in WAS; however, these will not be discussed in the present paper as they do not focus on phonetic-phonological characteristics of EAS.

The final consonant phenomena to be discussed in this paper will be variation in EAS stops. O'Neill (2010) argued that voicing is a continuum in EAS, as he found different degrees of voicing in different consonants. Likewise, he found different degrees of occlusivity, having encountered some stopless stops. Following on from that, O'Neill (2010) claimed that, in Andalusia, the most frequent pronunciation for stops in the sequence VOV is a voiced stop, and the second one is an approximant (except in Granada). O'Neill (2010) also noticed a tendency amongst men from Granada city to voice

the stops more and to pronounce them as approximants; however, women maintain voiceless stops to a greater degree. This tendency, however, is the opposite in Almeria. Furthermore, O'Neill (2010) believed that stops that are mainly voiceless are longer than those that are mainly voiced, and the latter ones are longer than the ones pronounced as approximants. For O'Neill (2010), the most common pronunciation for intervocalic /p/, /t/, and /k/ in Andalusia is a voiced stop, but when /s/ precedes them, the occlusion is always voiceless and aspirated. O'Neill (2010) concluded that there is a great degree of variation in the pronunciation of voiceless stops in Andalusian and he suggested that this variation could mean that there is an ongoing change where the phonemic system of Andalusian stops is being adjusted. O'Neill (2010) explained how this already happened in Spanish, as geminated voiceless stops in Latin became simple consonants in Spanish (e.g. *gutta – gota* 'drop'), voiceless stops became voiced (e.g. *catena – cadena* 'chain'), and voiced stops disappeared (e.g. *sedere-seer- ser* 'to be').

5. EAS: settled and unsettled disputes

A review of EAS literature shows, on many occasions, conflicting explanations and theories regarding certain phenomena. However, it is worth recognising that our understanding of EAS has advanced greatly since it was first studied by Schuchardt (1881). Thus, this section aims to clarify and summarise what is and is not known about this variety of Spanish to understand the current state of affairs of EAS.

5.1. What we know about EAS

All authors agree that in EAS, /s/ is deleted in word-internal and word-final codas; however, different authors have different opinions regarding how often and under which conditions /s/ is deleted.

Likewise, all authors agree on the fact that the semantic function of the deleted /s/ is transferred to another element of EAS speech, although there is no agreement on what that element of speech is (vowel quality, quantity, or a suprasegmental feature) or whether there is only one or more than one element that carry that semantic load.

There is also a consensus on the fact that other consonants are deleted in coda in EAS, although there is some difference in opinion regarding which consonants are deleted and under which circumstances. At the same time, there seems to be a consensus on the fact that consonants geminate in EAS, although the length, conditions, and phonemic importance of that gemination has been debated, especially since 2001.

Regarding vowels, there seems to be an agreement on the fact that some vowel harmony processes exist in EAS; nevertheless, their extent and phonemic importance are still being debated.

Finally, although not explicitly, all authors agree on the fact that there is a variety of Spanish spoken in the south-southeastern part of Spain which differs from Castilian Spanish. Its features show a great degree of variability; they vary from town to town, from one sociolect to another, and even within the same speaker, which seems to imply that this geolect is currently in rapid evolution.

5.2. What we do not know about EAS

Perhaps, the main pending answer regarding EAS is the one that prompted Navarro Tomás's (1938, 1939) work: does vowel doubling exist in EAS? Some authors believe it does; others deny it.

Amongst those who believe that vowel doubling exists in EAS, there is a difference of opinion on whether it is vowel quality, vowel quantity, or a suprasegmental element that carries the semantic load of deleted /s/. Likewise, those authors who reject vowel doubling in EAS also present different opinions; some support doubling of the vowel system due to segmental or suprasegmental features and others believe that it is the consonants which carry the semantic load of deleted /s/ in different

ways, such as through gemination. Finally, we have those who believe that the only way in which the semantic load of deleted /s/ is maintained in EAS is thanks to contextual information.

There are still many more controversies related to EAS features such as, for example, what other effects deleted /s/ has on the surrounding vowels and consonants due to assimilation, how vowel harmony works and, in the case of vowel or system doubling, whether all vowels are affected by this. As this article shows, there is an intense ongoing debate regarding different EAS features and I believe that this highlights the importance of carrying out further research if we want to improve our understanding of EAS.

5.3. EAS: some future lines of research

This review of literature has identified several future lines of research, mainly, those where there is no agreed answer to an issue; however, it is also important to highlight some future lines of research not previously identified by other authors.

The analysis presented in Herrero de Haro (2016b) suggests further phonemic splitting of vowels. This could be caused by an assimilation process of all vowels to the neighbouring consonants, but, when a consonant is deleted, the effect of that assimilation remains; this process, however, has not been corroborated yet. The data analysed in Herrero de Haro (2016b) suggest that EAS speakers produce and notice different vowels depending on which consonant is deleted. Thus, words such as *ves* 'you sing. see', *vez* 'once' and *ver* 'to see' are distinguished from each other in EAS even after /-s/ and /-r/ are completely deleted. The distinctive feature in this contrast remains unidentified but the conclusions reached in Herrero de Haro (2016b) suggest that the distinctive feature in operation is vowel quality. However, more data need to be analysed, as EAS could have also developed a series of suprasegmental elements similar to the ones found in tonal languages such as Mandarin Chinese. This later theory has not been analysed to date and it should be considered as a possible future line of research.

Regarding consonants, many authors, such as Navarro Tomás (1938, 1939) and Kaplan (2012), have only studied /s/ deletion, treating /s/ as the only consonant that is deleted in coda in EAS, while other authors, such as Gerfen and Hall (2001), believed that EAS deletes all consonants in coda. However, the reality is more complex than that. In EAS, at least in western Almeria, all consonants are deleted in coda except /l/, /r/, and /n/. Deletion of /l/ and /n/, and to a lesser degree /r/, depend on socio-linguistic factors; while /r/ is always deleted word-finally, it is only deleted word-internally before /l/ or /n/. This shows that the deletion process is not as advanced in /l/, /r/, and /n/ as in all other consonants.

A preliminary analysis of data I have gathered in western Almeria also suggests that all consonants are geminated when they follow a deleted consonant, not just /s/. This gemination also affects word-initial consonants that follow a deleted word-final consonant. Likewise, all consonants following a deleted consonant in speech are, to a greater or lesser degree, assimilated to the deleted consonant. Assimilation processes are more complex when a cluster of two consonants is deleted, such as /ns/ in *constante* 'constant'.

Finally, Navarro Tomás (1933) and Alvar (1973, map 1705) claimed that *ceceo* was the norm in western Almeria; nevertheless, my data show otherwise. These data show that *distinción* is now the norm, although there is still *ceceo* in Adra, and highlight the fact that the limits of certain phenomena need to be re-examined.

6. Conclusion

As the past 14 decades have shown, there has been an understandable change in the way in which research on EAS has been conducted. New software has overthrown impressionistic

analysis in dialectical studies; however, it has also forced researchers to narrow down the focus of their research, rather than focusing on EAS as a whole. Additionally, the increase in the use of linguistic software has also made it more difficult for scholars to work with spontaneous speech, limiting their studies to analysing read passages or carrier phrases, losing sight of the innovative, lively, and natural speech that modern researchers want to study and that once caught the attention of our beloved Navarro Tomás.

This review of literature has examined the main studies on EAS phonetics and phonology between 1881 and 2016 with the aim to offering an overview of what researchers do and do not know about this variety of Spanish. On the one hand, this paper has shown the advances of EAS studies since Schuchardt (1881) but, on the other, it has also identified future lines of research, both analysing areas where no consensus has been reached and studying features of EAS previously ignored.

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Appendix 1. Studies on the accent of Eastern Andalusian between 1881 and 2016

N.°	Reference	Focus of the study	Main conclusions and contributions to the study of EAS
1	Schuchardt (1881)	Study of *cante flamenco,* analysing Andalusian (Granada) accent to understand the particular pronunciation used in this type of musical genre.	- Many consonants are deleted: /d/ in any position; /g/ before /l/ and before /n/; /r/ in intervocalic position and in coda final; /x/, and /l/ in coda final; /b/ between /m/ and a vowel. - In coda, /s/ is aspirated and pronounced [h] when the next word does not start with a vowel. - *Yeísmo* and *seseo* are the norm. - Many consonants are substituted for others: /ɲ/ is substituted by [j̟]; /b/ is substituted by [g] in some cases and /g/ by [b] in others; /k/, /l/, and /r/ in coda, and /d/ before /r/, can be substituted by [i] or [u]; /l/ is substituted by [r] in coda and between a consonant and a vowel. - Initial Latin *f* is pronounced [h]. - Epenthesis occurs in certain contexts: [n] is inserted after /m+vowel/; [d] can be inserted before /j̟/; [g] is inserted before word initial /we/. - Certain vowels can be substituted for others; [i] for /a/, as in /aɲiˈðjo/ por *añadió;* [ai] for /ae/, as in /kaiˈɾa/ for *caerá.* - Metathesis is common, as in *naide* for *nadie.* - The sequence /nm/ tends to be pronounced [rn].
2	Wulff (1889)	Detailed study of Andalusian pronunciation (mainly Granada), and proposal of a series of phonetic symbols to transcribe Andalusian accent accurately.	- Andalusian Spanish neutralises /s/, /r/, /l/, and /d/ in coda. - [h] is used for /x/, for /s/ in coda, and for initial Latin *f.* - Stressed vowels are frequently lengthened. - Andalusian Spanish tends to have *seseo.* - Consonants are geminated if they follow /s/ deletion and /n/ is geminated after deleted /r/. - Aspirated /s/ can assimilate to the following consonant, as in *los pobres* [lom ˈpobreʰ]. - Word-final /n/ is usually pronounced [ŋ]. - /l/ is pronounced [r] in coda. - Voiceless consonants can be voiced, as in *campos* [ˈgampoʰ]. - Certain variation in pronunciation between speakers is caused by sociolinguistic factors. - There are differences between EAS accents, such as between the accents of Granada and Murcia. - /g/ and /k/ are more fricative than occlusive. - /j̟/ suffers depalatalisation and is pronounced [j]. - French and Andalusian Spanish have quite a few phonetic and phonemic characteristics in common, and certain phenomena found in Andalusian Spanish have also been present in French during the evolution of the language, especially when it comes to /s/ deletion.
3	Navarro Tomás (1916)	Study of 7 Spanish vowels; one type of /a/, /i/ and /u/, and two types of /e/ and/o/.	There are 7 phonetic vowels in Spanish: /a/, /i/, /u/, two types of /e/ and two types of /o/.

N.°	Reference	Focus of the study	Main conclusions and contributions to the study of EAS
4	Navarro Tomás et al. (1933)	Areas of *ceceo, seseo,* and *distinción* in Andalusia. Types of /s/ in Andalusia. Delimitation of Andalusian Spanish.	- Delimitation of *ceceo, seseo,* and *distinción* in Andalusia, together with identification of areas where the phenomena is stable, emerging or disappearing. - There is *distinción* in one third of Andalusia. - *Ceceo* and *seseo* became more common in Seville in 1570, but *seseo* spread first. - Delimination of Andalusian Spanish. What differentiates Andalusian Spanish from Castilian Spanish is the type of /s/; Castilian Spanish /s/ is concave apical, while Andalusian /s/ can be convex pre-dorsal or flat coronal.
5	Navarro Tomás (1938)	The effects of syllable-final /s/ deletion on the vowel system of EAS.	- In Andalusian Spanish, /s/ is deleted at the end of a syllable word-medially and word-finally. - When followed by deleted /s/, /a/ is velar and /e/ and /o/ are more open. - Vowel doubling *(desdoblamiento)* happens in Andalusian Spanish: the timbre acquired by the vowel preceding deleted /s/ generally carries the semantic function of the deleted consonant. - Vowel harmony happens in Andalusian: when final /s/ is deleted, stressed /e/ and /o/ are opened even if they are not in the final syllable, and stressed /a/ acquires a more velar timbre. - Open vowels in plural are much longer than closed vowels in singular. - Vowel doubling is not a stagnant phenomenon, but an emerging one in evolution. - There are 8 phonemic vowels in Andalusian Spanish, Vowel doubling affects all vowels except /i/ and /u/.
6	Navarro Tomás (1939)	The effect of syllable-final /s/ and word-final /r/ and /l/ deletion on the vowel system of Andalusian Spanish.	- The transformation of the vowel system in Andalusian Spanish is due to the neutralisation of /s/ at the end of words. - Final /s/ was reduced to an aspiration and that caused vowel opening, when the aspiration disappeared, vowel opening started to carry the semantic function of /s/. - In plurals, vowels become more open and longer, and some have *rehilamiento* 'whizzing' due to its intense vibration, which he thinks it is a hangover of the old aspiration. Plural vowels sound more tense and intense than singular vowels. - Due to different sociolects, in a same area we can find maintenance of final /s/, voiced or voiceless aspiration of /s/, and total loss of aspiration of deleted /s/. - Vowels are not given a phonological value: the idea does not lie in recognising the vowel difference with the distinction that it expresses, but in recognising the loss of /s/. - /l/ and /r/ can be deleted in final position, and the preceding vowels are also open. However, they are not open in the same degree as the ones that come from deleted /s/, nor are they as long or have such a whizzing sound.
7	Rodríguez-Castellano and Palacio (1948a)	The accent of Cabra (Cordoba), focusing on vowels.	- Detailed explanation of the vowels of this accent and some consonant phenomena. This is the first article to describe in detail the vowels of a specific area within Andalusia.
8	Rodríguez-Castellano and Palacio (1948b)	The accent of Cabra (Cordoba), focusing on consonants.	- This is the first article to describe in detail the consonants of a specific area within Andalusia. It also gives a very detailed account of different types of assimilation processes caused by [h].

N.°	Reference	Focus of the study	Main conclusions and contributions to the study of EAS
9	Alonso et al. (1950)	Andalusian vowels in speakers from Granada of a high socio-cultural level.	- There are at least 8 vowel doubling occurs in /a/, /e/, and /o/ but not in /i/ or /u/. - Opening as a result of /s/ deletion reaches the stressed vowel even if it is not in the last syllable, and vowels of the same type as the stressed one can open as well. - These changes affect all social strata in Granada. - There is phonologisation of vowel nasality in Granada; final /n/ is deleted and words are differentiated thanks to the nasality of the final vowel. - Women have *seseo* and men *ceceo* in Albaicin, a neighbourhood in Granada.
10	Rodríguez-Castellano (1952)	The morphology of the town of Cabra, linking it to various phonetic processes.	- Morphology in the town of Cabra is mainly Castilian Spanish heavily influenced by Andalusian pronunciation.
11	Alvar (1955a)	Presentation of some of the data already collected during the preparation of Alvar (1973).	- Mapping of vowel phenomena: vowel opening with phonologisation in parts of Eastern Andalusia, vowel opening with no phonemic value, and lack of differentiation between singular and plural vowels in other parts of Andalusia. - Proposal of a new vowel system for EAS: a quadrangular system with 5 degrees of openness and 2 timbres, totalling 10 vowel phonemes.
12	Alvar (1955b)	Comparison of different phenomena found in Andalusian accents with those found in various other languages.	- What happens in Andalusian accents has happened and still happens in other Romance and non-Romance languages. - The phonetic developments of Andalusian Spanish follow the pattern of other languages, such as French.
13	Alonso (1956)	Description of a phenomenon where /a/ is pronounced as an open [e] in certain contexts in an area of Andalusia.	- Delimitation of an area where /a/ is pronounced as an open [e] in final stressed position when it precedes deleted /r/, /s/, /l/, or /Θ/. - The phenomenon is in decline and it used to be found in a larger area.
14	Salvador (1957)	The accent of a town in Granada called Cullar-Baza.	- Tendency in this accent towards hiatuses. - Final /r/ and /l/ do not disappear yet. - /a/ is palatal in the plural, but it can be velar and open when it precedes a deleted /s/ and the following consonant is velar. - There is a phonetic difference between /e/ preceding /s/ deletion and /θ/ deletion, but not a phonological one. There is no difference between /i/ preceding /s/ or /θ/ deletion. - Proposal of a new vowel system for EAS: a triangular system with 10 vowel phonemes (all vowels double). - Detailed account of the results of aspiration of /s/ in contact with other consonants in word-medial and word-final position.
15	Alarcos Llorach (1958)	Analysis of the vowel system of EAS to determine how many vowel phonemes there are in EAS and what the difference between them is.	- There is a phoneme /h/ in EAS which is pronounced differently in different contexts. This phoneme causes gemination and the difference between singular and plural vowels. - There is no vowel doubling in EAS, but a doubling of the vowel system into two systems.

N.°	Reference	Focus of the study	Main conclusions and contributions to the study of EAS
16	Zamora Vicente (1960)	Dialects of Spanish in the Hispanic world, covering pronunciation and grammar.	- First author to produce a volume studying accents of all the Spanish speaking world. The section of Andalusia includes findings from previous studies by other authors.
17	Llorente (1962)	General explanation of Andalusian pronunciation, explaining diachronic and synchronic phenomena.	- Comparison of the work of different authors and their theories. - Delimitation of a range of voiced, devoiced, and semi-voiced consonants. - In the area identified in Alonso (1956), unstressed /a/ changes into [e] in final position when it is followed by deleted or aspirated alveolar consonants.
18	Alvar (1973)	Volume 6 of this atlas focuses on phonetic and phonological phenomena in Andalusia.	- Description of how consonants and vowels are pronounced throughout Andalusia. - The maps in this volume present an immense amount of new data; however, regarding EAS studies, it is important to mention that defend vowel doubling (map 1696), delimiting the area where it happens and explaining how vowels are pronounced in each town. The use of a velar or of a palatal /a/ varies across locations.
19	Contreras Jurado (1975)	Analysis of the vowel systems proposed for EAS in previous studies. Analysis of what marks the difference between *singular* and *plural* EAS vowels.	- There is no vowel doubling in EAS; the vowel system of EAS is like the one in Castilian Spanish, but with an extra prosodeme. - The difference between singular and plural in EAS does not lie in the vowels, but in words affected or not affected by a prosodeme. - In EAS, final and stressed vowels are closed in singular to help mark the singular/plural difference.
20	Gómez Asensio (1977)	Analysis of Andalusian vowels using generative phonology.	- Out of the EAS vowel systems posited in Alvar (1955a), Salvador (1957), and Alarcos Llorach (1958), Salvador's (1957) is the one that can be used better with generative phonology. - First author to propose a vowel system for Andalusian Spanish that uses a numerical scale for features instead of a binary one.
21	Salvador (1977)	Revision of previous EAS vowel systems, including Salvador's (1957).	- Modification of the ten-vowel system he proposed in Salvador (1957), positing a modified system with nine vowels where all vowels double except /u/.
22	Mondéjar Cumpián (1979)	The importance of studying Andalusian Spanish from a diacronic and synchronic perspective at the same time.	- Alarcos' (1958) system for EAS vowels is better than the ones presented in Alarcos Llorach (1949), in Alvar (1955a), and in Salvador (1957). - There are ten vowels in Andalusian Spanish, but they belong to two different subsystems. - Gemination has phonemic value in Andalusian Spanish.
23	Zubizarreta (1979)	Phonological and phonetic analysis of Andalusian vowel harmony.	- There is a difference between phonological and phonetic laxing. - /a/ does not open in vowel harmony in all contexts, and it does not let harmony travel past it. - /e/ and /o/ undergo phonemic laxing but if they are stressed vowel harmony cannot travel past them. - High vowels do not undergo phonemic laxing, but they undergo phonetic laxing in certain contexts. They do not prevent vowel harmony travel past them when they are in a stressed position. - When /s/ is aspirated, it assimilates the point of articulation to the following consonant.

N.°	Reference	Focus of the study	Main conclusions and contributions to the study of EAS
24	Alarcos Llorach (1983)	Review of some studies on EAS that came out after his 1958 article.	- There is no vowel doubling or vowel system doubling in EAS, but a phoneme [h] which is pronounced differently in different contexts.
25	López Morales (1984)	Whether vowel opening is the only plural marker in EAS.	- When /s/ is deleted, there is either an aspiration, pronoun, numeral, or an article which helps carry the semantic function of /s/. - /s/ deletion is much more common when there is another element marking the plural. If there is not any other element, the frequency of /s/ deletion decreases. - Vowel opening is an extra mark of plurality in 97% of cases. - Vowel opening in EAS is a phonetic feature, not a phonological one.
26	Lipski (1986)	Reduction of /s/ and /n/ in different contexts in different regions across the Spanish speaking world.	- Percentage for different areas of the Hispanic world of when /s/ is pronounced as [s], [h] or omitted, and when /n/ is pronounced as [n], [ŋ] or as a nasalised vowel.
27	Martínez Melgar (1986)	Difference between singular and plural EAS vowels in different positions.	- The difference between singular and plural EAS vowels is phonetic, not phonological. - The phonetic differences between singular and plural EAS vowels are not regular enough to consider them allophones. - In EAS, we need to talk about open vowels vs. non-open vowels, as singular vowels are not closed.
28	García Marcos (1987)	Influence of various sociolinguistic factors in the pronunciation of /vowel+s/ in the south of the province of Granada.	- The phonological process is not finished yet in this area, and there is a growing tendency towards [h]. - If things stay as they are, plurality in this area will be marked with [h] in the future, not with open vowels.
29	Cortés Rodríguez (1990)	Proposal of theoretical points to take into account to carry out linguistic interviews in the city of Almeria.	- The city and the province of Almeria have not been studied in detail by linguists. - The speech of cities will tell us how we will speak in the future. - Presentation of elements to consider to carry out a linguistic study of Almeria.
30	Cerdà Massó (1992)	Review of the main articles on EAS vowels published from 1939 to 1985.	- In EAS plurals, the semantic function of /s/ is moved from the last syllable to the first one. - There is vowel system doubling, not vowel doubling.
31	García Mouton (1992)	Analysis of the data presented in Alvar (1973) to find differences in the speech of Andalusian men and women.	- Women's speech is more normative and follows more prestigious patterns than men's. As a results, women's speech is more archaic than men's in its pronunciation and in its lexis, except in cities, where women's speech is more modern than men's.
32	Ueda (1993)	Analysis of various maps presented in Alvar (1973) using statistical analysis.	- The delimitation of EAS and WAS reached using this method coincides with the one proposed by various linguists, showing that this type of statistical analysis can be used in linguistics.

N.°	Reference	Focus of the study	Main conclusions and contributions to the study of EAS
33	Martínez Melgar (1994)	Analysis of nominal systems and plurals in EAS, focusing on /s/ in word-final position.	- Vowels of plural words have harmony, even in word-internal position. This is not the case with /i/ or /u/. - There is no lengthening of EAS vowels in the plural, and vowels tend to be shorter in the plural than in singular. - There is a meaningful vowel opening in EAS in the plural, although /a/ hardly opens and this vowel tends to be velar in the plural.
34	Hualde and Sanders (1995)	Study of whether vowel opening in EAS is a consequence of /s/ deletion.	- Final EAS mid vowels were raised considerably in singular before /s/ deletion happened. - When /s/ was deleted, what had been a phonetic difference became a phonemic one. - Due to negative sociolinguistic connotations, the original vowel raising is being lost and vowel opening, which does not carry the same negative stigma, is becoming the main feature in the opposition singular/plural.
35	Sanders (1998)	Analysis of whether EAS vowel alternation in singular and plural is statistically significant.	- The alternation in vowel quality between the singular and the plural forms is notable and consistent. This involves the mid vowels in all positions and contexts. - Palatalised and open word-final plural [a] alternation follows the pattern described previously in works such as Rodríguez-Castellano and Palacio (1948a) and Alonso et al. (1950). - Pre-tonic /a/, /e/, and /o/ have a different quality in the plural, but /i/ and /u/ do not. - /a/, /e/, and /o/ are longer in the plural, /u/ is the same and /i/ is shorter. - Plural tonic /a/ before word-final /a/ is palatalised. - EAS vowel laxing affects mainly mid and low vowels, and laxing of high vowels is less consistent and significant; this shows vowel doubling.
36	Jiménez Fernández (1999)	History of different consonant phenomena in Andalusian Spanish from the middle ages until today.	- This work does not introduce any new theories, but it analyses data from different authors to present a coherent history of consonant features in Andalusian Spanish.
37	Morris (2000)	Study of the different constraints which explain different outputs for debuccalisation of /s/ in Coria (Cáceres, Extremadura) and in Cullar-Baza (Granada, Andalusia).	- Three different outputs for debuccalisation of /s/ in two varieties of Spanish from Cullar-Baza and in one from Coria can be explained using ranked constraints which monitor the classes of [glottal widening/spread] and [continuant]. - Constraints can be suppressed or redistributed, but no new ones can be introduced. - These varieties of Spanish can alter the order of the constraints as long as they maintain a balance between positional markedness and feature faithfulness and defer to the unmarked when necessary.
38	Gerfen and Hall (2001)	Vowel duration, duration of aspiration, and duration of medial consonant gemination for aspirated /s/, /p/, and /k/ in EAS.	- Aspiration of /s/ is longer than aspiration of /p/ or /k/, meaning that words such as *casta* and *capta* are not fully neutralised. - Gemination of medial consonants is longer in aspirated /p/ and /k/ than in aspirated /s/. However, vowel duration is the same, so there is a significant difference of total duration in words with aspirated /s/, /k/, or /p/.

N.°	Reference	Focus of the study	Main conclusions and contributions to the study of EAS
39	Gerfen (2002)	Study of /s/ aspiration, vowel lengthening, consonant lengthening, and vowel aspiration in EAS.	- If consonant lengthening grows as a result of /s/ aspiration, vowel lengthening decreases. - Consonant lengthening is the result of /s/ aspiration, not of position. - In /s/ aspirated forms, vowels are only longer if we consider the period of aspiration as part of the vowel. - Consonant lengthening is a more robust indicator than vowel lengthening in signalling the presence or absence of a missing /s/ in coda position.
40	Hernández-Campoy and Trudgill (2002)	Analysis of whether some consequences of /s/ deletion, such as greater use of subject pronouns and vowel doubling, are, in fact, due to functional compensation.	- In Andalusia (and in Murcia) pronoun subjects are not used more frequently when /s/ is deleted in verbs. - The segment /s/ is deleted regardless of whether it has a grammatical function or not. - Open vowels, caused as a consequence of /s/ deletion, have been phonologised, but this has not been motivated by a need to compensate for /s/ loss, (i.e. this was not due to functional compensation processes).
41	Campos-Astorkiza (2003)	Reasons for compensatory lengthening of consonants in EAS.	- Compensatory lengthening is a mechanism used to maintain the same number of segments as in the input. - This is satisfied even when the feature content of the segment is changed.
42	Corbin (2006)	Analysis of the contexts in which /s/ is lenited in EAS.	- There seems to be a counter-bleeding relationship between laxing and lenition, as ordering lenition before laxing eliminates the environment for laxing. - If a syllable has a lenited coda, it must be treated as a closed syllables for the purposes of laxing. - Whether or not the coda position of the syllable in the underlying structure is filled is the key factor in determining whether a vowel laxes.
43	Peñalver Castillo (2006)	Study of the current characteristics of the speech of Cabra, comparing his findings with those from Rodríguez-Castellano and Palacio (1948a, 1948b).	- All vowels open in plural, especially /a/, /e/, and /o/. - Vowel harmony exists in Cabra. - Aspiration is retained more in rural areas. - Singular vowels are more closed than in Castilian Spanish, and plural vowels are longer. - Speakers under 45 years of age prefer /s/ deletion, speakers between 45 and 60 aspirate /s/ more, and those over 60 have the highest index of aspiration. - Speakers of a high sociocultural background prefer /s/ deletion, those of a middle sociocultural background present aspiration, and speakers of low socio-cultural backgrounds have the highest level of aspiration. - Speakers from higher socio-cultural backgrounds distinguish /s/ and /θ/, others have a flat coronal /s/ and practise *seseo.* - Cabra is closer to EAS than to WAS.
44	Bishop (2007)	Differences between the aspiration of /s/, /p/, and /k/ in codas in EAS.	- Aspiration replacing /s/ is significantly longer than the one in underlying /k/ or /p/. - /p/ and /k/ have shorter aspiration than /s/ but they are geminated more. - Increasing closure duration (gemination) in *hasta* made people perceive it as *apta,* but variation of length of aspiration had no effect on perception.

N.°	Reference	Focus of the study	Main conclusions and contributions to the study of EAS
45	Jiménez and Lloret (2007)	Analysis of EAS, using optimality theory to study vowel laxing and what causes it.	- Aspiration of /s/ triggers vowel laxing in EAS. - In harmonisation of vowels in EAS, stressed vowels and all following vowels open, and all other vowels can either open or not. - Vowel harmony is a result of languages trying to minimise the resetting of articulators. - In EAS, harmonised vowels are attracted to strong positions, such as a stressed position, in order to become more perceptible.
46	Melguizo Moreno (2007)	Sociolinguistic study of the fricativisation of /tʃ/ in Granada.	- Fricativisation of /tʃ/ is stigmatised and it is almost exclusively found in men from low sociolects. - It is more common in older men, although it is also present in 25-54 years old men with lower levels of instruction. - Women reject fricativisation of /tʃ/, although it can be found in older women with up to a medium level of instruction. - The fricative allophone /ʃ/ tends to appear more word-initially.
47	Torreira (2007)	A study of whether EAS and WAS voiceless stops are consistently post-aspirated when preceded by underlying /s/.	- The conditioning factor for post-aspiration of /t/ in Andalusian is the presence of a preceding underlying /s/. - This feature should be considered a cue of /s/ aspiration. - The contrast post-aspirated vs. non-post-aspirated /t/ is more salient in Western Andalusia, but it is also present in EAS. - Evidence suggests that all this also applies to /sk/ and /sp/.
48	Lloret and Jiménez (2009)	Review of the theories that explain why harmonisation happens in EAS.	- Vowel opening and vowel harmony, which appear after /s/ is omitted, also happen when /x/ ([h] in Andalusian) is omitted.
49	O'Neill (2010)	Analysis of the phonetic cues that speakers from the cities of Seville, Cadiz, Granada and Almeria use to distinguish pairs such as *pasta/pata,* and *cata/cada.*	- The pronunciation of the stop is what distinguishes pairs such as *pasta* /Vowel+s+Voiceless stop+Vowel/ (/VsOV/) and *pata* /Vowel+Voiceless stop+Vowel/ (/VOV/). In /VsOV/, the stop is more aspirated than in /VOV/, and, in EAS, the stop in the former sequence is also longer. - The stop is not aspirated in /VOV/: it is voiceless in 13% of cases and voiced in 69%, and in 19% of cases it is pronounced as an approximant. - In /Vowel+Approximant+Vowel/ (/VAV/), the approximant is deleted in 34% of cases. Men present a higher tendency to deleting approximants and to voicing voiceless stops. - In /VsOV/, the stop is more aspirated in WAS and longer in EAS. - In /VsOV/ and in /VOV/, the phonetic cues that distinguish them are aspiration, voicing and, in Almeria and Granada, the length of the stop consonant. - /VOV/ and /VAV/ can be neutralised in 12.5% of cases.
50	Carlson (2012)	Analysis of compensatory processes in Andalusian vowels preceding coda /s/ deletion.	- There is no consistent pattern in the alternation of F1 and F2 in vowels preceding deleted /s/. - There is phonemicisation of vowel quantity in syllable-final position within a word, with 24.4% increase in duration for the vowel preceding deleted /s/.
51	Kaplan (2012)	Analysis of different theories of variation which explain EAS vowel harmony.	- Multiple-rankings analysis of EAS vowel harmony is more accurate than the ones performed with other theories.

N.°	Reference	Focus of the study	Main conclusions and contributions to the study of EAS
52	Tejada Giráldez (2012)	Linguistic factors which affect the pronunciation of /s/ in coda in speakers from the city of Granada with a high sociocultural background.	- In Granada, speakers of a high sociocultural level pronounce word-final /s/ as [s] in 1.4% of cases, and as [h] in 24.5%. Their percentage for /s/ deletion is 70.5%, and the following consonant is geminated in 1.9% of cases. They pronounce [h+gemination] 1.7% of the time. - There is a tendency towards aspiration within words and towards elision in word-final position. - As the age of the speaker increases, the percentage of pronunciation of /s/ in coda as [s] or as an aspiration increases. Gemination and elisions decrease the younger the speaker.
53	Ruch and Harrington (2014)	Study of synchronic and diachronic factors in the change from pre- to post-aspiration in EAS and in WAS.	- There is a sound change in progress in Andalusia and post-aspiration is becoming a stronger cue for distinguishing word-medial /st/. - Younger and WAS speakers are more likely to pronounce /st/ with shorter pre-aspiration but with longer post-aspiration. - There is a trading relationship between closure and post-aspiration duration. - /st/ closure duration is shorter for younger WAS speakers.
54	Herrero de Haro (2016a)	Study focusing on whether context and vowel harmony are necessary to identify underlying /s/ in EAS.	- EAS speakers do not need context (e.g. articles, numerals) or vowel harmony to identify underlying /-s/.
55	Herrero de Haro (2016b)	Acoustic and perceptual study of the effects of /s/, /r/ and /ϴ/ deletion on a preceding /e/.	- The deletion of word-final /s/, /r/, and /ϴ/ changes the quality of a preceding /e/ in different ways. - EAS speakers from western Almeria can identify whether /e/ is followed by an underlying consonant or not. - EAS speakers can identify /e/ and /e/ preceding deleted /s/ and /r/ without the help of the context; it is hypothesised that a similar process is in operation in other EAS vowels.

How to reference this article: Herrero de Haro, A. (2017). The Phonetics and Phonology of Eastern Andalusian Spanish: A Review of Literature from 1881 to 2016. *Íkala, Revista de Lenguaje y Cultura, 22*(2), 313-357. DOI: 10.17533/udea.ikala.v22n02a09