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UNIDAD ACADÉMICA DE CIENCIAS SOCIALES

CARRERA DE CIENCIAS DE LA EDUCACIÓN MENCIÓN INGLÉS

# TEACHERS APPLYING MINIMAL PAIRS AND ITS IMPORTANCE FOR USING AND RECOGNITION OF THE PHONEMES WHICH REPRESENT CH, SH, K

GUILLEN GUILLEN WINSTON EDMUNDO

MACHALA
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**ABSTRACT**

This current essay states in a detailed way that English teachers must be aware of the existence of phonetics and an alphabet, introduces the International Phonetic Alphabet showing only the consonants, showing how the sounds is produced and what happens when it is ellocuted. It submits three voiceless phonemes. The way these phonemes are paired and introduces some activities on how to distinguish each one, and put them in a list where learners should recognize which is which. Moreover it gives some examples with pictures and phonetic transcription, letting the readers interact with the three sounds by placing them in the list they would belong. It remarks the importance of the International Phonetic Alphabet in providing a sound to each letter and their utterances. The grapheme "ch" sometimes sounds as if words where written with one either phoneme of /k/ and /ʃ/. Therefore it has devoted an interesting activity to deal with. Key words: voiceless phonemes, pair work, ellocuted, phonetic transcription, grapheme.

Author: Winston Edmundo Guillen Guillen

**Key words:**

Voiceless phonemes, pair work, ellocuted, phonetic transcription, grapheme.

## INTRODUCTION

Pronunciation is an issue many English teachers try not to mention, since they are not quite sure of the way they sound whenever they utter words. Learners have in their minds the sounds of Spanish word sounds of the alphabet, so that it hard for them to give another utterance to the written words, because this is how they are used to doing, which makes hard for the interlocutor knows and understands the message.

Teachers have to do their best in order to change their performance of utterances of English; they have to stop eluding this aspect and create their own teaching strategies and set their own goals to become a phonetician in anyhow.

In Ecuador English has been involved within the Curriculum for about 70 years so far. Two Reforms have been provided on behalf of teachers' improvement as users of English. However, teachers do not master the language. The aim of this study goes further than explaining how consonants are categorized, but to explain in a detailed way, how three phonemes deal within the recognition of both, grapheme or digraphs, which become into struggling figure out which symbol goes with which letter.

The role of the phonetic alphabet is fundamental for learners to change their mind for both teachers and students; however, the biggest responsibility relies on teachers' shoulders, who are the ones who need to polish their performance of basic words.
The phonetic alphabet is submitted which includes the consonants phonemes with all the characteristics they have; namely the manner and the place where sounds are produced.
When describing the three phonemes / tʃ /, / ʃ /, / K /, their phonological description is given on which organs to use to produce the sounds and a relationship with the Spanish sound is made. As matter of fact, some examples are given in order to identify individual sounds by using the minimal pair technique.

Minimal pair activity will help learners to notice the distinction of /sh/ /ch/ because there are phonemic variation between them both, the third phoneme sounds as the grapheme of the alphabet. Then he mixed the three phonemes, by giving a list of words where words, in spite of having the same consonant spelled, take different production

of sound. This is something students will have to learn by heart, otherwise it would be tedious to see and recognize words that they have not been familiarized before.

TEACHERS APPLYING MINIMAL PAIRS AND ITS IMPORTANCE FOR USING AND RECOGNITION OF THE PHONEMES WHICH REPRESENT CH, SH, K

## DEVELOPMENT

### Oral approach for language learning.

Different methods and approaches have been given in order to let teachers help learners deal with a suitable use of English. For example, the direct method natural method or even their own methods. Some people think that the only way for learner gain an accurate management of the language as if it is learned when they are children, because learning the mother tongue sounds is automatic.

However, there are some people who have lived in an English speaking country and have failed the pronunciation of it because they have not had exposure of the language or just because they do not want to be heard as a “speaker with accent”. However, there are two other group of people who have set high goals to have a native-like pronunciation. Whereas other group who want to show they are foreigners with a foreign accent. (Maley Alan teaching pronunciation)

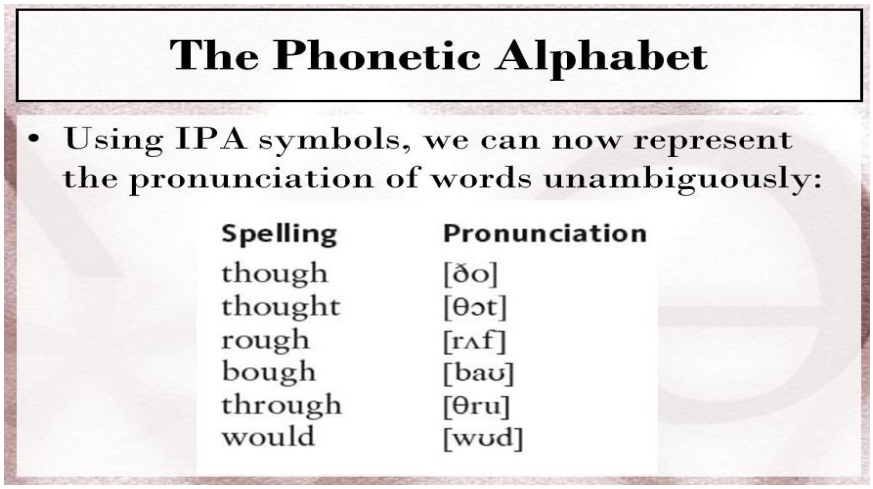
The oral approach requires learners practice the language everywhere at any time, as if they are learning their mother tongue that is, speaking before seeing anything printed, this is how the process works. After they know some active vocabulary, it would be then advisable to help them with issues related to sound linkage and grammar, nevertheless grammar can also be easily learnt for the innate knowledge people are born with. In general, infants’ ability to discriminate minimally different segments in onset position in quite good, but they have difficulty when the contrast is in word-final position (Stephanie Archer, 2012)

**The International Phonetics Alphabet**

It is a system of symbols that represent all the sounds in English like a common alphabet but with one big difference, each letter is represent by a phoneme. In Spanish the way letters sound is similar as the way they are written. In English are quite different letters have different sounds which can be heard, however it is often difficult to 'read the sound'. Pronunciation is not based on spelling. Any letter of English represents more than one sound, or it may not represent any sound at all. Eric Bakovic said "phonemes contrast with each other because they serve to distinguish different words from each other; allophonemes of the same phoneme do not" (Bakovic, 2013)

| | MANNER | VOICING | PLACE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Bilabial | Labiodental | Interdental | Alveolar | Palatal | Velar | Glottal |
| OBSTRUENTS | Stop | Voiceless | p | | | t | | k | ʔ |
| | | Voiced | b | | | d | | g | |
| | Fricative | Voiceless | | f | θ | s | ʃ | | h |
| | | Voiced | | v | ð | z | ʒ | | |
| | Affricate | Voiceless | | | | | tʃ | | |
| | | Voiced | | | | | dʒ | | |
| SONORANTS | Nasal | Voiced | m | | | n | | ŋ | |
| | LIQUID Lateral | Voiced | | | | l | | | |
| | LIQUID Rhotic | Voiced | | | | | r | | |
| | Glide | Voiced | w | | | | j | w | |

Let us see some words with the same sequence of letters. Namely "ough", whose sounds are not consistent with their spelling.




Source.- https://www.google.com.ec/search?q=alfabeto+fonetico+internacional+solo+consonantes&espv

**Classification of consonants**

There are 21 consonants letters in the written alphabet, they are the same graphemes we use in Spanish, however in phonetic terms. There are 24 consonant sounds, which unfortunately do not correspond to each written letter, it is the case that some graphemes do not have a phoneme to represent the, for example the graphemes “c, q and k”, share the same /k/ phoneme.

> Amy Stoller has developed a method of using straws to make several manners of producing consonants –nasal, stop plosive, and fricative- more readily accessible to my clients, especially those who have no previous voice or speech training, and who have little kinesthetic sense of what goes on “in there”; that is, inside their mouths when they speak (Hoza, 2013)

Consonants are classified as either voiced or voiceless. In articulating the former, the vocal cords vibrate. (The vibration may easily be felt by softly touching the larynx with your fingers as the consonant is being articulated.) In articulating latter, the vocal cords do not vibrate.

Consonants may also be classified according to the manner of articulation and the point of articulation: that is, how and where the flow of air is stopped or impeded when the consonant is articulated.

Learners will be able to make articulation of this eight phonemes and digraphs by imitation, repetition, at the beginning go start with mechanical drilling. The grapheme “ch is used also in Spanish words like chapa, Chilla, China, chorrera, hacha, are very common. Regarding to ‘sh’, our teachers struggle a little bit with this grapheme, even though they have been surrounded by this sound in words like: paseo shopping Machala, shampoo. Shunsho, shorts. Some people have been named after Washington, relatives use its ‘nick’; however it is mispronounced like ‘Wacho’. The name of Sharon, the Ecuadorian singer who died at the beginning of 2015 was heard by thousands of Ecuadorian and here it was a chance to help those who said ‘Charon’ to make them aware on how it was supposed to sound ‘sh’ instead of ‘ch’.
Our mouth, including, tongue, teeth, teeth ridge, soft and hard palate are able to produce several utterances of many kinds, voiced and unvoiced sounds, both vowels

and consonants. This is the reason why it is necessary to be familiarized with the chart of IPA, in order to have an idea on how letters are articulated.

Fortis and lenis consonants, voiced or voiceless

**What are minimal pairs?**

Minimal pair is pairing words in order to make people realize that there is light difference in one of the elements of the words paired, either the phoneme or the digraph

> It is a well-known fact that the members of a set of traditional phonemes, which by definition serve to distinguish the two members of a minimal pair (such as aɪ/iː in bite/beat), may occasionally be used interchangeably without any semantic consequences (as aɪ/iː in either). Phonemes that can alternate in this way are arguably more closely related to each other than to other phonemes. (Kjellmer, 2010)

Given the above, we can mention that no matter what pairing pretended to make, the phonemes being discussed here share the same manner of articulation. On the other hand, M. Chodorow and S. Karp achieved experiments were a rating task was used to study the effects of differences in vowels, consonants and segments order whose results stated that these three issues are represented independently (Karp, 2007)

As regards with sounds discrimination, early aged is the best option to attain it. "Theory as a framework for the study of child pronunciations. Several have pursued the idea that the difference between the sound systems of child and adult language lies in a difference in the relative ranking of structural and faithfulness constraints" (Pater, 2009)

> The source of children's failure in earlier word-learning experiments is the task demand rather than the lack of detail in phonological representations. Additional support for this view comes from studies investigating children's ability to detect mispronunciations in familiar words. This is an arguably less demanding task than learning two similar-sounding new words (Altvater-Mackensen, 2013)

*Ch* and *Sh* are both called digraph because they both represent two graphemes whereas /k/ is a phoneme.

**The phoneme /tʃ/**


This phoneme is voiceless affricate, it is produced by placing the tongue with the sides in contact with the upper molars, the tip in contact with the alveolar ridge, and the velum closed, with the blade elevated nearly to the hard palate, an impeded plosion is produced.

**The phoneme /ʃ/**

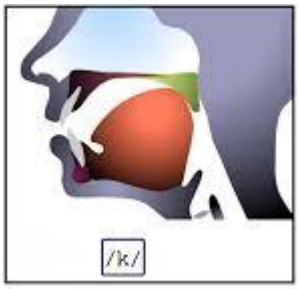

This consonant is voiceless palate-alveolar, fricative continuant. It is produced by a simultaneous blocking the nasal passages with the velum and raising the tongue against the lateral surfaces of the upper teeth; the tongue goes toward a point just back of the alveolar ridged.
This phoneme may take two other sounds (see activity N°2)

The production of / **ʃ** / and / **tʃ** / sometimes confuse Spanish speakers "It has been well-established that the likelihood of two phonemes participating in a speech error increases with phonological similarity. Hence, both consonant harmony and speech errors show increased potential for interaction between similar sounds" (Walker, 2008)

**The phoneme /K/**

It is a voiceless, aspirated, velar plosive. It is produced by closing the nasal passage with the velum and blocking the oral passage with the back of the tongue placed

against the velum,  building up air pressure in the pharynx, (3) exploding the air through the mouth sharply. The plosion, or aspiration, of (k) is strongest initially, next strongest finally (except when unreleased), and weakest medially. English (k), especially initially and finally, is much more aspirate than the (k) of many foreign languages, such as the Romance languages. Speakers of those languages should aspirate (K) much more strongly than they are accustomed to do.




This phoneme can either go at the beginning or at the end of words, sometimes even having another consonant phoneme, in this case, we will be talking about a cluster consonant. “The great majority of the clusters fall, as a matter of fact, into a limited although relatively large number of types. But if we limit ourselves, in our analysis, to the clusters of two consonants” (Vogt, 2015)

“The majority of syllables have a single consonant onset (almost 90% of syllables in a representative wordlist). A minority have no onset, and a similar sized minority have an underlying cluster onset” (Palmer, 2008)

## ACTIVITIES

### Minimal pairs (/ʃ/or /tʃ/)

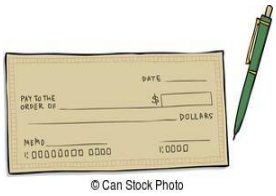
**1. - Match the pictures with their words**

| |
|---|
| **chauffer, mustache, parachute, church, chair, chef, champagne, cheque** |




**1.**_____ **2.**_____ **3.**_____ **4.**_____




**5.-**_____ **6.**_____ **7.**_____ **8.**_____

**2.—Match the words with the correspondent phonemic transcription.**

| | |
|---|---|
| chauffer, | ʃərtʃ |
| mustache, | məstæʃ |
| parachute | ʃofər |
| church, | ʃæmpen |
| chair, | tʃɛk |
| chef, | pɛrɪʃut |
| champagne, | tʃɛr |
| cheque | ʃɛf |

This activity was once used by a teacher and it is given here as good one

**Minimal differences (/ʃ/or /tʃ/) or /k/**

Look at the list of words, put them where they correspond.

| | | | |
|---|---|---|---|
| bronchitis | Cheque | chaperone | match |
| Chase | Chin | brochure | backache |
| cliché | Chip | chaos | archeology |
| Cheat | choir | champagne | sachet |
| Archive | choose | machine | Cheap |
| Cheer | chord | chore | chemist |
| Chef | Christmas | charisma | mustache |

| / ʃ / | / tʃ/ | /k/ |
|---|---|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

## CONCLUSIONS

After having achieving an essay about minimal pairs and dealing with two graphemes and a phoneme, whose production of sound and discrimination in utterances has finally ended up with a very conscious study of their similarities and differences.

The paper explains in a briefly way, the consonant chart, showing just the ones used by the English language. Moreover, individual description of phonemes is given. Some references on difficulties when pronouncing letters are also provided.

The paper outstands as well the importance of minimal pairs, supported by some authors who have devoted works in this issue. For that reason, two activities have been provided to show how to make these three sounds deal in a list of words.

Teachers will be benefited if using this activities provided that learner like seeing pictures and match them according to their spelling and phonemic transcriptions.

English phonetics is a passionate task to learn by both learners and teachers, in this case the work is addressed for teachers to improve the performance of only three phonemes, but they can go further than that by checking some more structures themselves.

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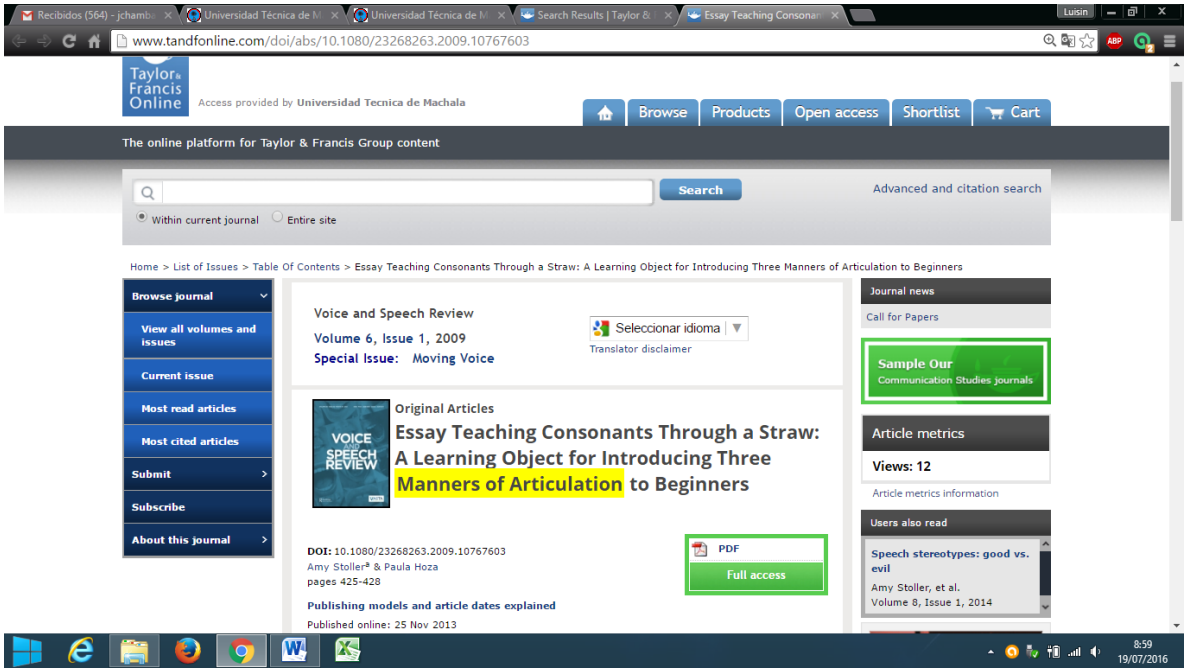
# ANNEXES:




Essay *by Amy Stoller, with illustrations by Paula Hoza*

**Teaching Consonants Through a Straw: A Learning Object for Introducing Three Manners of Articulation to Beginners**

Amy Stoller is the sole proprietor of Stoller System Dialect Coaching & Design, VASTA's Manager of Internet Resources, and IDEA's Associate Editor for NYC. Resident Dialect Designer at the Mint Theater Company since 1997, she is also the ongoing Production Dialect Coach for Anna Deavere Smith's *Let Me Down Easy*, and coaches regularly on Nickelodeon's hit children's series *Dora the Explorer* and *Go, Diego, Go!* New York and regional clients include Pearl Theatre Co.; Keen Co.; Long Wharf; American Repertory Theatre; Peterborough Players; Origin; Urban Stages; NY Musical Theatre Festival; SPF; Boomerang Theatre Co.; and Distilled

In May 2007, I developed a method of using straws to make several manners of producing consonants—nasal, stop plosive, and fricative—more readily accessible to my clients, especially those who have no previous voice or speech training, and who have little kinesthetic sense of what goes on "in there"; that is, inside their mouths when they speak.*

I've had good success with this technique, which *extends the oral cavity* to where clients/students can *see* it, so they can more readily connect to the principles behind the way these sounds are made. (You may find it helpful to put a straw between the "lips" a diagram of the organs of articulation, so your client/student can see how the straw extends the oral cavity.) Here are the instructions.

**Preparation:** Holding the straw lightly with one hand (don't squeeze!), place one end in your mouth and breathe (in and) out *through* the straw. (It shouldn't cause problems to breathe in through the nose, but most of my clients gravitate naturally toward mouth- (that is, straw-) breathing at this stage.)

**Step One:** Put your fingertip completely over the free end of the straw and keep breathing. (Figure 1) How are you breathing? Through the *nose*.

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Integrating research disciplines in speech production

# Phonemes, segments and features

DOI: 10.1080/01690965.2013.848992
Eric Baković[a*]
pages 21-23
Publishing models and article dates explained
Received: 13 Sep 2013
Accepted: 19 Sep 2013



made in H.'s article. While I restrict myself most specifically to H.'s article, I hope that these comments are also of some use to others who, like H., aim to integrate the ideas of various traditions in models of speech processing.

**Keywords**: phonology; phonological theory; phonemes; segments; features



## Phonemes and segments

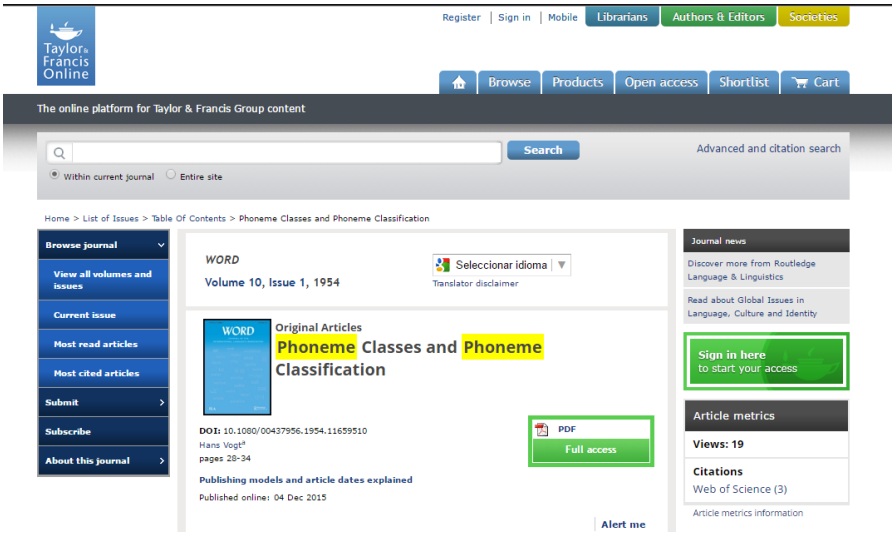
As the second half of the title of H.'s article makes clear, one of H.'s goals is to say something about "the role of the phoneme in speech processing". What H. refers to throughout the article, however — except in one instance, to which I turn momentarily — is not, strictly speaking, what phonologists call *phonemes*, but rather what we call *segments* (or, as H. more properly calls these on p. 15, "individual speech sounds"): a central unit of representation corresponding — though sometimes only roughly — to the union of what we call consonants and vowels.

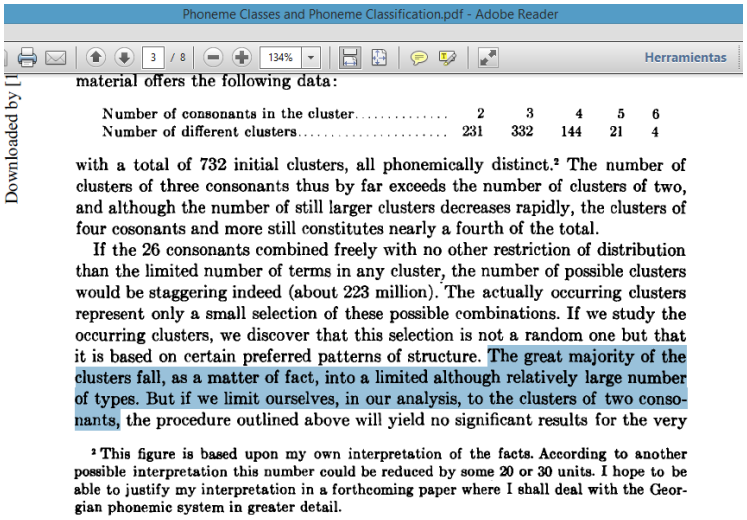
A substantial class of phonological generalisations (whether these are expressed procedurally or declaratively) is *segmental* in that they make specific reference to these units of representation; the generalisation "word-final obstruents are voiceless" refers to those word-final segments specified with the feature(s) that define "obstruents" and further specifies these segments as "voiceless" and the generalisation "non-low back vowels are round" refers to those segments specified with the feature(s) that define "non-low back vowels" and further specifies these segments as "round".

Depending on the details of particular representational

What are phonemes, then? As noted above, there is one instance of a proper reference to phonemes in H.'s article: on p. 14, where H. notes that one kind of thing that research in generative phonology aims to explain is "why the same phoneme, [say] /t/, is aspirated [$t^h$] in one context like *table* and unaspirated [t] in another context like *stable*". This reference is proper because it refers – albeit obliquely – to the central idea of the phoneme: it is a single underlying/mental unit of categorisation, represented as a segment like /t/, that has contextually determined variant surface pronunciations (*allophones*), represented as segments like [$t^h$] and [t]. In short, phonemes *contrast* with each other because they serve to distinguish different words from each other; allophones of the same phoneme do not.[2]

But while it is true that a subset of research in generative phonology is often characterised this way (e.g., in introductory linguistic textbooks and courses, and in basic descriptions where theoretical issues are not at stake), it is not the case that there is widespread agreement among generative phonologists on the proper analysis of the complementary distribution of surface segments like [$t^h$] and [t] (more generally, aspirated and



Phoneme Classes and Phoneme Classification.pdf - Adobe Reader

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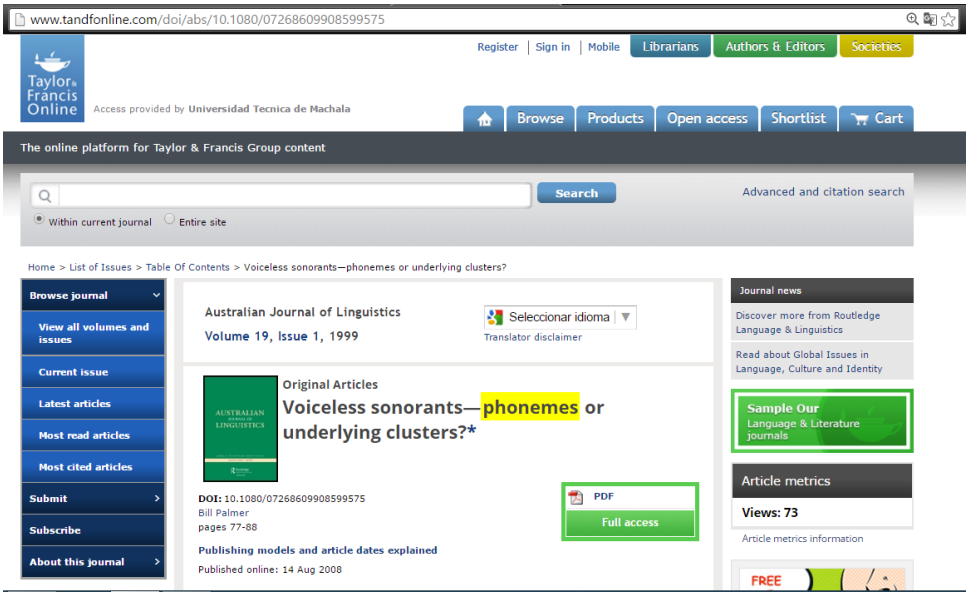
material offers the following data:

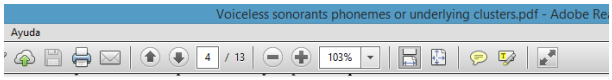
| | | | | | |
|---|---|---|---|---|---|
| Number of consonants in the cluster | 2 | 3 | 4 | 5 | 6 |
| Number of different clusters | 231 | 332 | 144 | 21 | 4 |

with a total of 732 initial clusters, all phonemically distinct.[2] The number of clusters of three consonants thus by far exceeds the number of clusters of two, and although the number of still larger clusters decreases rapidly, the clusters of four cosonants and more still constitutes nearly a fourth of the total.

If the 26 consonants combined freely with no other restriction of distribution than the limited number of terms in any cluster, the number of possible clusters would be staggering indeed (about 223 million). The actually occurring clusters represent only a small selection of these possible combinations. If we study the occurring clusters, we discover that this selection is not a random one but that it is based on certain preferred patterns of structure. The great majority of the clusters fall, as a matter of fact, into a limited although relatively large number of types. But if we limit ourselves, in our analysis, to the clusters of two consonants, the procedure outlined above will yield no significant results for the very

[2] This figure is based upon my own interpretation of the facts. According to another possible interpretation this number could be reduced by some 20 or 30 units. I hope to be able to justify my interpretation in a forthcoming paper where I shall deal with the Georgian phonemic system in greater detail.




and across word boundaries.

(3) a. /banesokeo/ 'a place name' → [bansokeo]
b. /mane dou/ 'big man' → [man dou]

The underlying intervening vowels are revealed in careful speech, in citation and in speaker syllabification.

Certain other consonant sequences, however, do reflect underlying onset clusters. Syncope of the kind seen in (3) generates codas in which the old second syllable onset attracts the mora associated with that syllable's vowel and joins with the preceding syllable to form a new, heavy syllable. Other than in these circumstances Kokota syllables are open, consisting of a possible onset plus a nucleus, but with no coda.[3] The majority of syllables have a single consonant onset (almost 90% of syllables in a representative wordlist). A minority have no onset, and a similar sized minority have an underlying cluster onset.

These underlying clusters do not occur medially as a coda plus single C onset. Rather they occur freely medially or initially, and are always syllabified by speakers as onset clusters even when medial. Thus /snakre/ 'allow' is always syllabified as /sna.kre/, and /haglu/ 'sweep' as /ha.glu/. In fact there is even some evidence of a preference for initial rather than medial clusters, with a number of lexical changes underway involving a second syllable onset cluster C2 shifting to first syllable onset. For example the earlier form /bakru/ 'water' has become /braku/ in current Kokota and /faklano/ 'rock outcrop on beach' has become /flakano/.

Underlying clusters in Kokota conform to the broad constraints that C1 must be an obstruent, and C2 must be a voiced coronal sonorant.

Further constraints on C1 exist. These are place class constraints, and differ for plosives and fricatives. With plosives the constraint is on coronals, with only labials (/p/ and /b/) and noncoronal nonlabials (/k/ and /g/) occurring as cluster C1. With fricatives the constraint is on nonlabial noncoronals, with only labials (/f/ and /v/) and coronals (/s/ and /z/) occurring as C1. All fricative C1s except /f/, however, are rare, in some cases attested in only one lexical item.

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Original Articles

# Now You Hear It: Fourteen-Month-Olds Succeed at Learning Minimal Pairs in Stressed Syllables

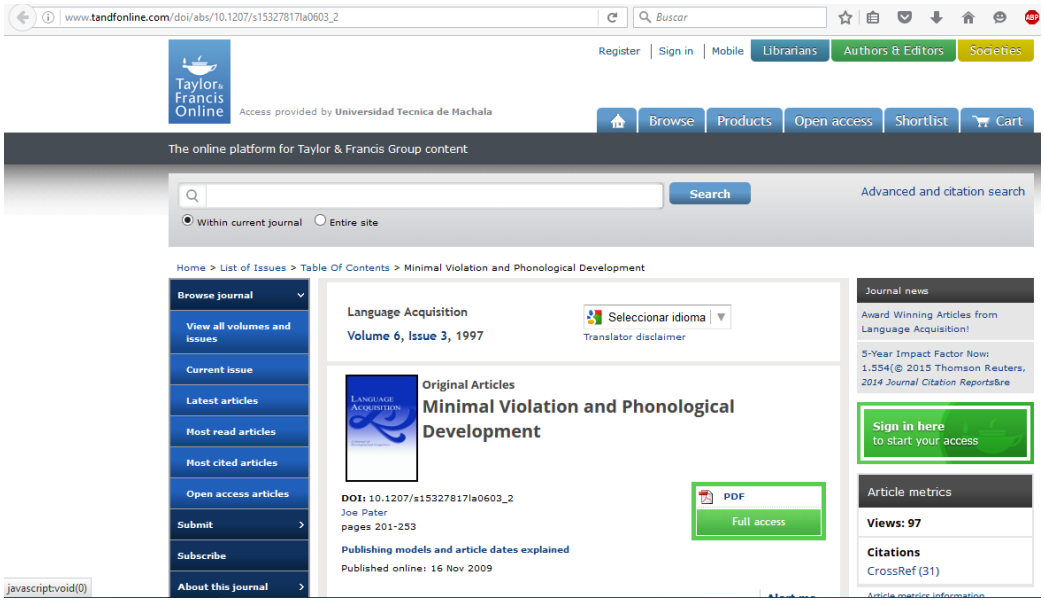
DOI: 10.1080/15248372.2012.728544
Stephanie Archer[a], Jennifer Ference[a] & Suzanne Curtin[a*]
pages 110-122

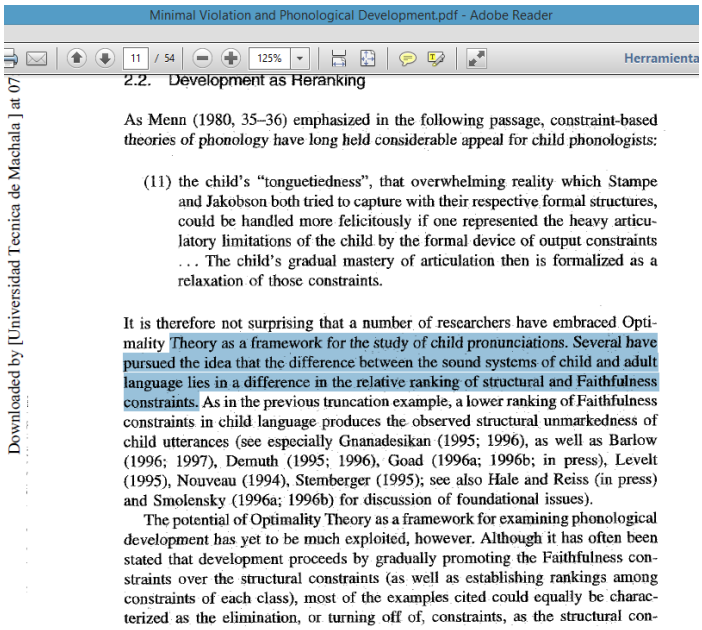




Jusczyk et al., 1993). Infants aged 7 months old also use this stress information to segment words from the continuous speech stream (e.g., Curtin, Mintz, & Christiansen, 2005; Johnson & Jusczyk, 2001; Jusczyk, Houston, & Newsome, 1999). By 12 months old, infants can learn two novel word–object pairings that differ solely in their stress pattern (Curtin, 2009). In addition, 14-month-olds notice when the stress of a specific word has shifted to a different syllable (Curtin, 2010). Thus, it appears that infants attend to and use stress information at different stages of development for a variety of purposes as they develop their lexicon.

Stress and syllable position can also influence the perception of segmental information. Eleven-month olds will fail to recognize a familiar word when there is a change in a consonant, but only if the change appears in a stressed syllable (e.g., *búbbles* to *múbbles*; Vihman, Nakai, DePaolis, & Hallé, 2004). Otherwise, when the mispronunciation happens in an unstressed syllable, infants will treat both words as familiar (e.g., *canárd* to *ganárd* "duck"; Hallé & Boysson-Bardies, 1996). This suggests that infants attend to segmental properties of stressed syllables of familiar words. However, if infants of this age are first familiarized with weak–strong nonwords (e.g., *tupóng*) and then presented with forms that differ in the phonetic content of the weak syllable (e.g., *bupóng*), they orient their attention to the phonetically similar forms, suggesting that they are storing the details of unstressed syllables, at least when they occur at the beginning of words (Johnson, 2005). In general, infants' ability to discriminate minimally different segments in onset position is quite good, but they have difficulty when the contrast is in word-final position (Zamuner, 2006). Acoustic cues are often neutralized in word-final position making it a much less salient position compared with syllable onsets in which contrasts are often strengthened or enhanced (Beckman, 1998). Thus, infants' ability to detect contrasts depends on where the contrasts occur, the salience of the position, and the surrounding segmental context. Here, we taught 14-month-old infants novel word–object pairings where the words differed minimally by one consonant at the beginning of a stressed syllable. We used polysyllabic words to examine whether the position of the stressed syllable would influence



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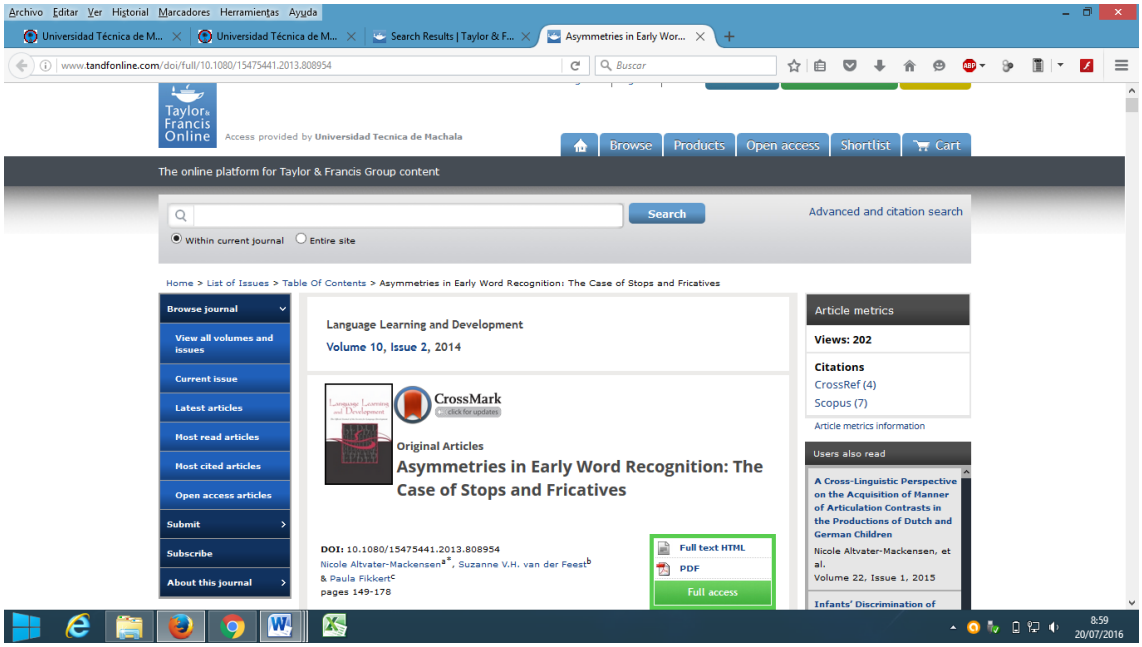
2.2. Development as Heranking

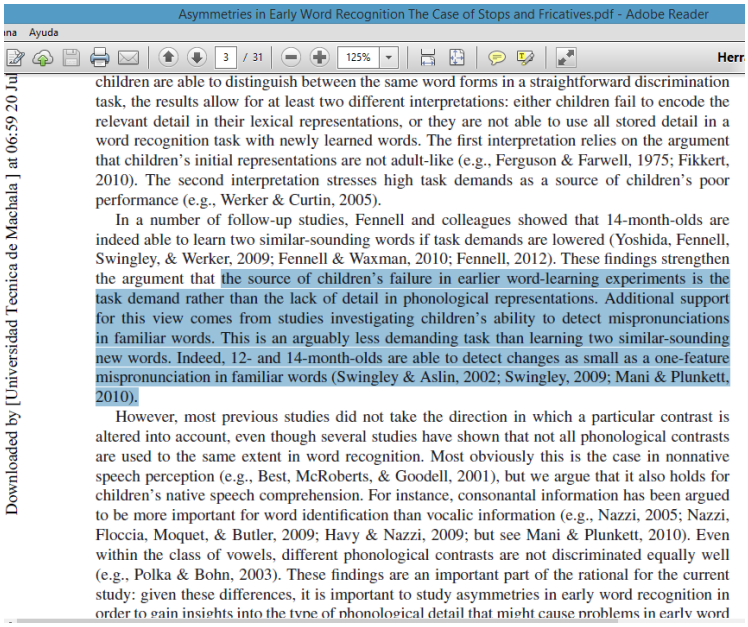
As Menn (1980, 35–36) emphasized in the following passage, constraint-based theories of phonology have long held considerable appeal for child phonologists:

(11) the child's "tonguetiedness", that overwhelming reality which Stampe and Jakobson both tried to capture with their respective formal structures, could be handled more felicitously if one represented the heavy articulatory limitations of the child by the formal device of output constraints . . . The child's gradual mastery of articulation then is formalized as a relaxation of those constraints.

It is therefore not surprising that a number of researchers have embraced Optimality Theory as a framework for the study of child pronunciations. Several have pursued the idea that the difference between the sound systems of child and adult language lies in a difference in the relative ranking of structural and Faithfulness constraints. As in the previous truncation example, a lower ranking of Faithfulness constraints in child language produces the observed structural unmarkedness of child utterances (see especially Gnanadesikan (1995; 1996), as well as Barlow (1996; 1997), Demuth (1995; 1996), Goad (1996a; 1996b; in press), Levelt (1995), Nouveau (1994), Stemberger (1995); see also Hale and Reiss (in press) and Smolensky (1996a; 1996b) for discussion of foundational issues).

The potential of Optimality Theory as a framework for examining phonological development has yet to be much exploited, however. Although it has often been stated that development proceeds by gradually promoting the Faithfulness constraints over the structural constraints (as well as establishing rankings among constraints of each class), most of the examples cited could equally be characterized as the elimination, or turning off of, constraints, as the structural con-



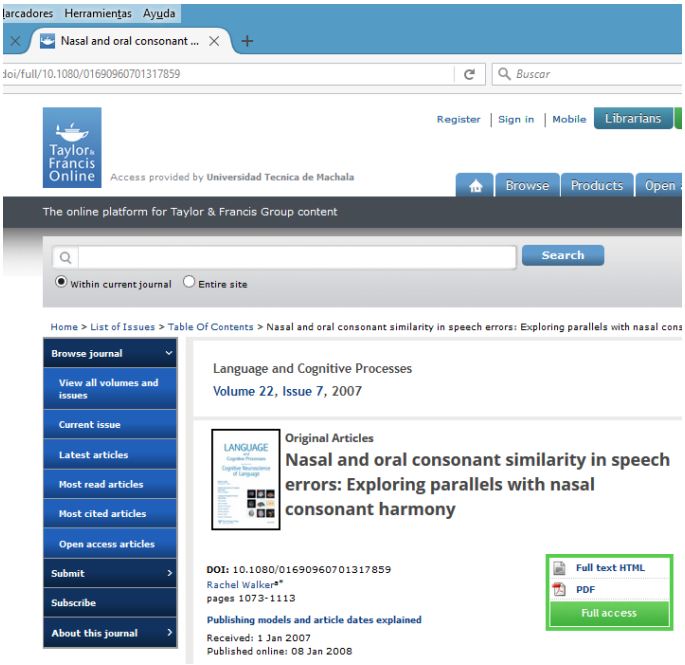
Asymmetries in Early Word Recognition The Case of Stops and Fricatives.pdf - Adobe Reader



children are able to distinguish between the same word forms in a straightforward discrimination task, the results allow for at least two different interpretations: either children fail to encode the relevant detail in their lexical representations, or they are not able to use all stored detail in a word recognition task with newly learned words. The first interpretation relies on the argument that children's initial representations are not adult-like (e.g., Ferguson & Farwell, 1975; Fikkert, 2010). The second interpretation stresses high task demands as a source of children's poor performance (e.g., Werker & Curtin, 2005).

In a number of follow-up studies, Fennell and colleagues showed that 14-month-olds are indeed able to learn two similar-sounding words if task demands are lowered (Yoshida, Fennell, Swingley, & Werker, 2009; Fennell & Waxman, 2010; Fennell, 2012). These findings strengthen the argument that the source of children's failure in earlier word-learning experiments is the task demand rather than the lack of detail in phonological representations. Additional support for this view comes from studies investigating children's ability to detect mispronunciations in familiar words. This is an arguably less demanding task than learning two similar-sounding new words. Indeed, 12- and 14-month-olds are able to detect changes as small as a one-feature mispronunciation in familiar words (Swingley & Aslin, 2002; Swingley, 2009; Mani & Plunkett, 2010).

However, most previous studies did not take the direction in which a particular contrast is altered into account, even though several studies have shown that not all phonological contrasts are used to the same extent in word recognition. Most obviously this is the case in nonnative speech perception (e.g., Best, McRoberts, & Goodell, 2001), but we argue that it also holds for children's native speech comprehension. For instance, consonantal information has been argued to be more important for word identification than vocalic information (e.g., Nazzi, 2005; Nazzi, Floccia, Moquet, & Butler, 2009; Havy & Nazzi, 2009; but see Mani & Plunkett, 2010). Even within the class of vowels, different phonological contrasts are not discriminated equally well (e.g., Polka & Bohn, 2003). These findings are an important part of the rational for the current study: given these differences, it is important to study asymmetries in early word recognition in order to gain insights into the type of phonological detail that might cause problems in early word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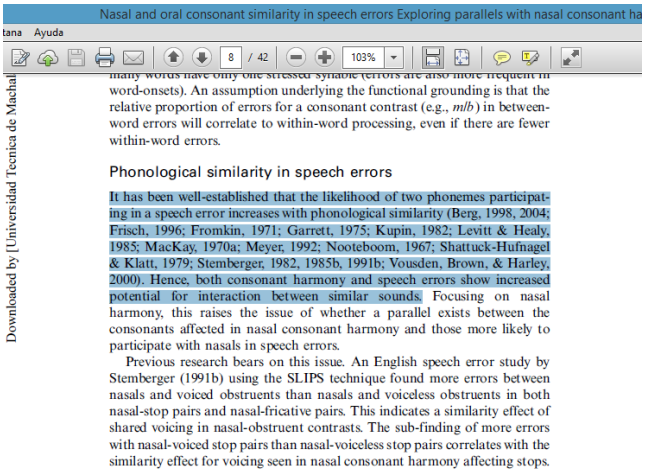
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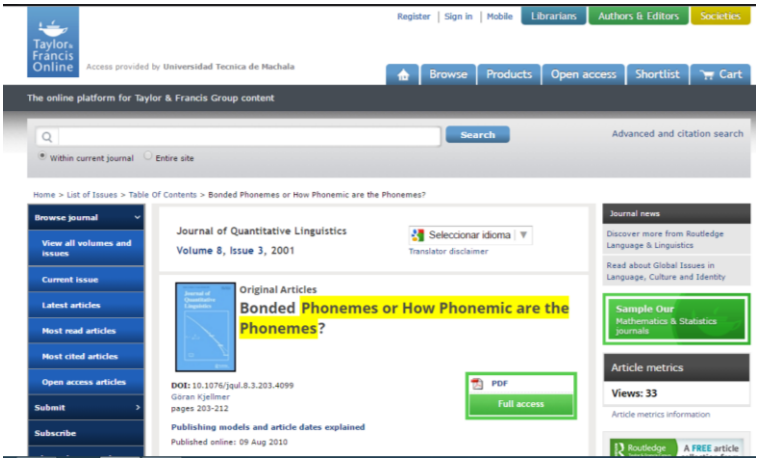
word-onsets). An assumption underlying the functional grounding is that the relative proportion of errors for a consonant contrast (e.g., *mlb*) in between-word errors will correlate to within-word processing, even if there are fewer within-word errors.
Phonological similarity in speech errors
It has been well-established that the likelihood of two phonemes participating in a speech error increases with phonological similarity (Berg, 1998, 2004; Frisch, 1996; Fromkin, 1971; Garrett, 1975; Kupin, 1982; Levitt & Healy, 1985; MacKay, 1970a; Meyer, 1992; Nooteboom, 1967; Shattuck-Hufnagel & Klatt, 1979; Stemberger, 1982, 1985b, 1991b; Vousden, Brown, & Harley, 2000). Hence, both consonant harmony and speech errors show increased potential for interaction between similar sounds. Focusing on nasal harmony, this raises the issue of whether a parallel exists between the consonants affected in nasal consonant harmony and those more likely to participate with nasals in speech errors.
Previous research bears on this issue. An English speech error study by Stemberger (1991b) using the SLIPS technique found more errors between nasals and voiced obstruents than nasals and voiceless obstruents in both nasal-stop pairs and nasal-fricative pairs. This indicates a similarity effect of shared voicing in nasal-obstruent contrasts. The sub-finding of more errors with nasal-voiced stop pairs than nasal-voiceless stop pairs correlates with the similarity effect for voicing seen in nasal consonant harmony affecting stops.




# Bonded Phonemes or How Phonemic are the Phonemes?*

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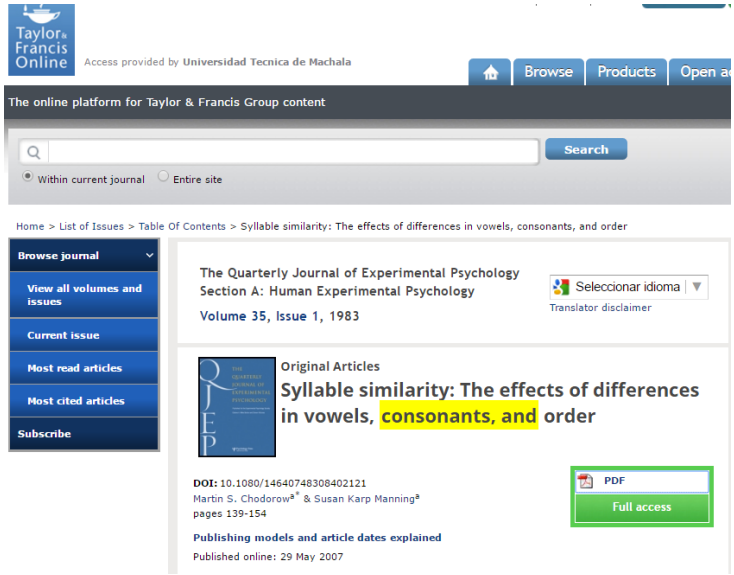
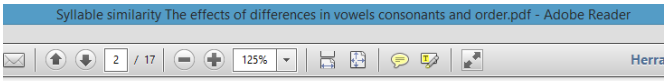
## ABSTRACT

It is a well-known fact that the members of a set of traditional phonemes, which by definition serve to distinguish the two members of a minimal pair (such as **aɪ/iː** in *bite/beat*), may occasionally be used interchangeably without any semantic consequences (as **aɪ/iː** in *either*). Phonemes that can alternate in this way are arguably more closely related to each other than to other phonemes. The present paper is an attempt to chart such relations in British English in a quantitative fashion in order to see how systematic they are and to draw some theoretical and practical conclusions from the results.

The final sound of the English noun *spouse* and the English verb *grease* can be either voiced or voiceless, according to a fairly recent pronouncing dictionary (Wells, 1990). This may at first seem mildly surprising as **s** and **z** are traditionally regarded as two different English phonemes and as there is no




# Syllable similarity: The effects of differences in vowels, consonants, and order

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In five experiments with synthetic and natural speech syllables, a rating task was used to study the effects of differences in vowels, consonants, and segment order on judged syllable similarity. The results of Experiments I–IV support neither a purely phonemic model of speech representation, in which vowel, consonant, and order are represented independently, nor a purely syllabic model, in which the three factors are integrated. Instead, the data indicate that subjects compare representations in which adjacent vowel and consonant are independent of one another but are not independent of their positions in the syllable. Experiment V provided no support for the hypothesis that this position-sensitive coding is due to acoustic differences in formant transitions.

## Introduction

What is the nature of the perceptual representation of speech? In an effort to learn more about this question, we have used a task in which subjects rate pairs of syllables for similarity. Based on the simple assumption that more similar perceptual relationships