

A Study of English Consonant Clusters

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<Abstract>

We can see the sequences of two or more consonants within one syllable in the English language. Such sequences of consonants are called consonant cluster. English has a great inventory of consonant clusters. Unlike many languages, English permits from one to three consonants in the initial position, whereas many more consonant clusters occur in the final position because of the addition of -s or -ed endings. Prator, Jr. shows 43 initial and about 175 final consonant clusters, which are especially troublesome for most speakers whose native language does not have such complex syllables.

Furthermore, they also have difficulty in the medial position or when words with final consonant clusters precede in the stream of speech words beginning with initial clusters. It is therefore easy for new speakers to make an error of inserting a vowel between them. For example, they tend to pronounce the one syllable word 'street' as four syllables /si-ti-ri-ti/. A careful listener, however, can notice that the native speakers pronounce them quickly and directly in order that no finishing sound may creep in.

Sometimes even native speakers of English try to find ways to simplify these consonant clusters. Take the word 'glimpsed' for instance: glimpsed /-mpst/ becomes /-mst/. Notice that too much use of the simplification may result in unnatural pronunciation.

In any case, new speakers of English will be easily accustomed to the pronunciation of the consonant clusters if they make exhaustive researches and practise repeatedly on them because there is no way to avoid pronouncing these consonant clusters which are an essential part of the sound system of English.

英 語 子 音 群 의 研 究

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<요 약>

한 음절 속에 두개 또는 그 이상의 자음이 연결되어 있는 것을 자음군(Consonant Cluster)이라고 한다. 자음군은 어두자음군과 어미자음군으로 크게 나누어지는데 영어에는 이와 같은 자음군들이 상당히 많이 있다.

먼저 영어의 음절 구조를 살펴 보면 CCCVCCCC의 경우처럼 핵음(Syllable Nucleus)을 중심으로 각각 앞에 3개 뒤에는 심지어 4개의 자음이 오는 것을 알 수 있다. 이와 같이 한 음절에서 모음 앞에 여러 형태의 자음이 잇달아 오는 경우에 어두자음군이 형성되는데 영어에는 이런 형태가 43개나 있다고 생각된다.

특히 어미 자음군에서는 -s, -ed 등 굴절 어미의 추가로 그 숫자가 급증하는데 Prator, Jr.는 약 175가지의 예를 제시하고 있다. 이러한 사실은 결과적으로 이들 자음의 연속 관계를 가지고 있지 않은 나라의 사

람들에게는 영어 발음에 큰 어려움이 아닐 수 없다.

또한 어중 자음군이러던가 언어의 흐름 속에서 미자음군과 두자음군이 만나는 말의 경우에도 문제가 된다. 영어 학습자들은 자국어의 습관에서 곧잘 이들 자음군 사이에 불필요한 모음을 삽입시킴으로써 (예: 한 음절인 'street'의 발음에 있어 /si-ti-ri-ti/와 같이 4음절로 발음한다) 부자연스런 발음을 하게 되는데 이는 영어를 모국어로 하는 사람들의 말을 자세히 들어 보면 자음군 사이에 모음이 끼어 들지 못하도록 곧바로 빠르게 발음하는 것을 알 수 있다.

영미인들까지도 영어의 자음군의 발음에 대한 간소화를 추구한다. 때때로 이들 자음군의 간소화는 어둠을 털어 줄 수가 있다. 가령 'glimpsed'에서 어미 자음군 /-mpst/는 때로 /-mst/로 발음하면 편하다. 물론 이의 지나친 사용은 역시 부자연스런 발음이 된다는 것에 유의해야 한다.

아름다운 영어 발음에 있어서 커다란 부분을 차지하고 있는 이들 자음군의 발음을 회피할 수는 없으므로 영어 학습자들은 자음의 분포 상황의 분석을 통해 가장 빈도수가 많은 것들을 찾아내서 꾸준히 연습한다면 이러한 자음군의 발음에 보다 용이하게 익숙해질 수 있을 것이다.

I. Introduction

It is absolutely important for new speakers of the English language to master the sound system and the features of arrangement that constitute the structure of English. These are the matters that the native speaker of English has early acquired as unconscious habits. We must, however, make a scientific study of the English speech sounds and their distribution to acquire these as automatic habits.

This study is an attempt to analyze English consonant clusters and to treat the problems which occur in connection with the distribution of consonants.

English allows many clusters of consonants—that is, sequences of two or more consonants within a syllable—which are especially troublesome for speakers of languages which do not permit such sequences. Korean speakers, for example, find it difficult to produce an initial consonant cluster like /st-/ without placing a vowel before it. They tend to say /si-ti-ri-ti/ for 'street'. More of a problem for most speakers than the initial consonant clusters are

those which come in final position.

This study will examine the most frequently occurring consonant clusters. It will also explore the ways in which the production of these consonant clusters and consonant combinations can be made less difficult.

II. English Syllable Structure

Unlike many languages, English has a complex inventory of consonant clusters. In comparing different sound systems R. Lado set up following check: Are the phonemes and their variants similarly distributed?⁽¹⁾ Let's begin with an analysis of English syllable structure to see the arrangement of consonants. We find that the syllable structure is generally classified into five parts when we make researches on English syllabication.

- a. Vowel
- b. Vowel+Consonant (Clusters)
- c. Consonant (Clusters)+Vowel
- d. Consonant (Clusters) + Vowel + Consonant (Clusters)
- e. Consonant (Clusters)+Syllabic Consonant⁽²⁾

An research on syllable structure among one

(1) Robert Lado, *Linguistic Across Cultures*, Ann Arbor: University of Michigan Press, 1957, p.13.

(2) Some phoneticians transcribe as syllabic consonants such combinations as the /l/ after the /s/ in 'pencil', /pɛnsəl/ or /pɛns,l/, and the /l/ after the /p/ in 'apple', /æpəl/ or /æp,l/, where the points of articulation are not quite identical. In this case, however, either alternate pronunciation is perfectly normal in American English.

syllable words by Trnka⁽³⁾ shows an overwhelm-
-ing majority in the above fourth pattern.

The table below is English syllable structure
for one syllable word.

Syllable Structure	Example
V	I
CV	she
VC	up
CVC	can
CCV	blue
CCVC	twin
VCC	apt
CVCC	milk
VCCC	acts
CVCCC	tempt
CVCCCC	texts
CCVCC	stops
CCVCCC	twelfth
CCVCCCC	glimpsed
CCCV	spew
CCCVCC	street
CCCVCC	splits

As seen in the above table, English permits
from one to three consonants at the beginning
of a word. In final position it permits many
more consonant clusters.

The following chart shows the distribution of
consonants in English.

Initial	Medial	Final
C-	-C-	-C
CC-	-CC-	-CC
CCC-	-CCC-	-CCC
	-CCCC-	-CCCC

It is easy to predict that speakers whose
mother tongue does not permit the above
sequences will have much trouble in pronouncing
the complex syllables of English—syllables
consisting of such consonant clusters as CCC or
CCCC. Even if the medial consonant clusters
are divided into initial and final consonant
clusters, they will have same difficulty in

pronunciation.

III. Consonant Clusters in the Initial Position

Initially, the English language permits from
one to three consonants. Most of us are accus-
tomed to thinking that only one consonant comes
before a vowel, yet in English words such as
'glass and grass' or 'split and spread' there
are two or three consonants before a vowel.
Not all of the initial consonant clusters occur
with equal frequency in English. Initial clusters
of consonants plus /r/ or /l/ are particularly
difficult for Korean learners because they are
mutually confusing and are of high frequency.

Fries lists as many as thirty-nine initial conso-
nant clusters in English.⁽⁴⁾ On the other hand,
the following table with word examples of each
consonant cluster is presented by Prator, Jr.⁽⁵⁾

Table of Initial Consonant Clusters

/sp/ spin	/kr/ crow	/pl/ play
/st/ stay	/br/ bring	/kl/ clay
/sk/ sky	/dr/ drink	/bl/ blue
/sf/ sphere	/gr/ grey	/gl/ glue
/sm/ small	/fr/ free	/fl/ flew
/sn/ snail	/θr/ three	/sl/ slew
/tw/ twin	/ʃr/ shrink	/spy/ spew
/kw/ quick	/by/ beauty	/sky/ skew
/dw/ dwell	/py/ pure	/skw/ squall
/gw/ Guam	/ky/ cure	/spr/ spray
/sw/ swim	/vy/ view	/str/ stray
/hw/ whem	/fy/ few	/skr/ scratch
/θw/ thwart	/hy/ hue	/spl/ split
/pr/ pray	/my/ mute	/skl/ sclerosis
/tr/ tray		

The charts below clarify the rules for the
combination between the English consonants
when we analyze the above lists:

(3) Trnka interprets syllabic consonant as a combination of vowel and consonant in his research.

(4) Charles C. Fries, *Teaching and Learning English as a Foreign Language*, Ann Arbor: University of Michigan Press, 1945, p.18.

(5) Clifford H. Prator, Jr., *Manual of American English Pronunciation*, Los Angeles: University of California, 1971, p.151.

(Chart 1) Combination of two consonants in initial position(C₁C₂-)

C ₁ ↓ \ C ₂ →	l	r	y	w	p	t	k	f	v	θ	m	n
p	+	+	+									
t		+		+								
k	+	+	+	+								
b	+	+	+									
d		+		+								
g	+	+		+								
f	+	+	+									
θ		+		+								
h			+	+								
s	+			+	+	+	+	+			+	+
ʃ		+										
z												
v			+									
l												
m			+									
n												
c												
j												

(+) mark means a combination of two consonants.

(Chart 2) Combination of three consonants in initial position (C₁C₂C₃-)

C ₁ C ₂ ↓ \ C ₃ →	l	r	y	w
sp	split	spray	spew	
st		stray	skew	
sk	sclerosis	scratch	skew	squall

In the combination of English consonants we find the following rules.

a. All consonants except /h/, /ʒ/ and /ŋ/ occur in initial position. This rule is also adapted to the final position.

b. The same consonants such as /tt-/, /gg-/ or /-ss/, /-kk/ never occur repeatedly in any combination.

c. In the combination between consonant with lower sonority and that with high sonority, the latter always occurs near the nucleus. Therefore, we can see the third consonant in the combination of three consonants is always glide.

d. The combination of more than three consonants is divided into that of two consonants,

which must be able to exist as a separate cluster respectively. For example, the /str-/ in 'stray' is divided into /st-/ and /tr-/ and they also exist as consonant clusters.

These clusters will no longer be a problem for the speakers of English if the production of each consonant cluster plus /r/ and /l/ with high frequency is learned well.

In initial s followed by a consonant, some speakers attempt to precede these clusters with a vowel sound or to insert it into these consonant clusters. This type of mispronunciation can usually be avoided by concentrating on the /s/-sound and consciously lengthening it: /s-kræp/ in 'scrap'. In any way this consonant cluster is one of the special areas of difficulty in pronunciation of English.

Now let's go on the consonant clusters in the final position. I presented the medial consonant clusters in English syllable structure. I think they are fully regarded between initial and final clusters.

IV. Consonant Clusters in the Final Position

By comparison the English language has many more consonant clusters in the final position than in the initial position. The addition of *-s* or *-ed* endings frequently produce consonant clusters. Although many of these are of very low frequency, others appear over and over again in normal conversation.

An research of Prator, Jr. shows that the */-nt/* cluster occurred over 200 times and the */-ts/* over 100 times in 10,000 words—about an hour and half of recorded speech.⁽⁶⁾ These will be a particular problem for the speakers which never permit such sequences. He lists more consonant clusters in the final position than does Fries.⁽⁷⁾

The table below is also cited from Prator, Jr., with word examples of each.⁽⁸⁾ Of the 175 clusters, however, only about 35 marked with an asterisk (*) are frequently used.

Table of Final Consonant Clusters

*/lp/	help	/rb/	barb	/dθ/	width
*/lt/	belt	/rg/	berg	/pθ/	depth
/lk/	milk	/rv/	curve	/fθ/	fifth
*/lf/	self	/rm/	arm	/ltʃ/	filch
*/lθ/	wealth	*/rn/	barn	/ldʒ/	bulge
/lb/	bulb	*/rs/	farce	/rtʃ/	march
*/lv/	delve	/rʃ/	harsh	/rdʒ/	barge
/lm/	film	*/rl/	girl	/ntʃ/	pinch
/ln/	kiln	/nθ/	month	*/ndʒ/	range
*/ls/	else	*/ns/	once	/mpt/	tempt
/lʃ/	Welsh	/nf/	Banff	/rmθ/	warmth
/sp/	wasp	*/nt/	ant	/ksθ/	sixth
/sk/	ask	/mp/	camp	*/rnt/	burnt
/rp/	harp	/mt/	dreamt	/dst/	midst
*/rt/	heart	/mf/	nymph	/lfθ/	twelfth
*/rk/	hark	*/ŋk/	link	/ŋst/	amongst
/rf/	scarf	/ŋθ/	length	/lft/	delft
*/rθ/	hearth	/tθ/	eighth		
*/pt/	stopped	/bd/	robbed	/bz/	cabs
*/kt/	liked	/gd/	tagged	*/dz/	beds
/ft/	laughed	/vd/	lived	/gz/	tags
/θt/	lathed	/ðd/	bathed	/ðz/	bathes
*/st/	passed	/md/	seemed	*/mz/	seems
*/ʃt/	washed	*/nd/	cleaned	*/nz/	cleans
*/ps/	stops	/ŋd/	longed	*/ŋz/	things
*/ks/	likes	*/ld/	filled	*/lz/	fills
*/ts/	eats	*/rd/	marred	*/rz/	cars
/θs/	baths	*/zd/	caused	/vz/	lives
/fs/	laughs	/zd/	rouged	/rθt/	earthed

(6) Prator, Jr., *op.cit.*, p. 151.

(7) Fries, *ibid.*, p. 18. He lists as many as 151 final consonant clusters of English.

(8) Prator, Jr., *ibid.*, pp. 152—153. He lists 178 consonant clusters in final position, but three of them seem to be overlapped or misrepresented.

/tʃt/	watched	/rft/	surfed	/lps/	helps
/dʒd/	judged	/mft/	triumphed	/rps/	harps
/lpt/	helped	/lst/	repulsed	/mps/	camp
/rpt/	harped	*/rst/	forced	/sps/	wasps
/spt/	clasped	/nst/	sensed	/lks/	milks
/lkt/	milked	/tst/	Ritzed	*/rks/	works
/rkt/	worked	/pst/	lapsed	*/ŋks/	links
/ŋkt/	linked	/kst/	taxed	/sks/	asks
/skt/	asked	/lʃt/	Welshed	/lts/	belts
		/rʃt/	marshed		
/rts/	hearts	/rfs/	surfs	/dzd/	adzed
/nts/	ants	/mfs/	nymphs	/lbz/	bulbs
/sts/	tests	/pθs/	depths	/rbz/	barbs
/pts/	crypts	/fθs/	fifths	/ldz/	holds
/kts/	acts	/lbd/	bulbed	/rdz/	cards
/fts/	lifts	/rbd/	barbed	/ndz/	sands
/lθs/	tilths	/lvd/	delved	/lmz/	films
/rθs/	hearths	/rvd/	carved	/rmz/	arms
/nθs/	months	/lmd/	filmed	/lnz/	kilns
/ŋθs/	lengths	/rmd/	armed	/rnz/	turns
/dθs/	widths	/lnd/	kilned	/rlz/	curls
/tθs/	eighths	/rnd/	turned	/lvz/	delves
/lfs/	Alf's	/rld/	curled	/rvz/	carves
		/nzd/	bronzed	/rgz/	bergs
/ltʃt/	filched	/mpts/	tempts	/ltst/	waltzed
/rtʃt/	marched	/rtst/	quartzed	/rldz/	worlds
/ntʃt/	pinched	/ŋkst/	minxed	/ŋkts/	instincts
/ldʒd/	bulged	/mpst/	glimpsed	/lfθs/	twelfths
/rdʒd/	charged	/rpts/	excerpts	/ntst/	chintzed
/ndʒd/	changed	/ksθs/	sixths	/lkts/	mulcts
/ksts/	texts	/rstst/	thirsts		

Let's examine the English phonotactic structure⁽⁹⁾ of these final consonant clusters. It will clarify the rules for the combination between the English consonants.

(Chart 3) Combination of consonants in final position (-C₂C₁)

C ₂ ↓ \ C ₁ →	p	t	k	b	d	g	c	j	f	θ	s	ʃ	v	z	ʒ	m	n	l
p		+								+	+							
t										+	+							
k		+									+							
b					+									+				
d						+				+				+				
g						+								+				
c(tʃ) ⁽¹⁰⁾		+																

(9) Kim, Tae Han, *English Phonemics*, Seoul: Hyung-Sul Publishing Co., 1973, pp.80-81.

(10) I took the method of transcription of Trager-Smith, Pike and Nida in transcribing such consonants as c(tʃ), j(dʒ), ʃ(j) and ʒ(ʒ).

		$C_1 \rightarrow$																		
		$C_2 \downarrow$	p	t	k	b	d	g	c	j	f	θ	s	š	v	z	ž	m	n	l
	j(dž)					+														
	f		+									+	+							
	θ			+									+							
	s		+	+	+	+														
	š																			
	v															+				
	ž																			+
	z																			+
	ž																			+
	m		+	+																+
	n									+	+	+	+							+
	ŋ				+															+
	l		+	+	+	+	+			+	+	+	+	+	+	+				+
	r		+	+	+	+	+	+	+	+	+	+	+	+	+	+				+

(+) mark means a combination of two consonants.

As we can see in the above chart, the combination of syllabic liquid or syllabic nasals such as /l/ or /m, n, ŋ/ was excluded.

Notice that the union of the frictionless /m, n, l/ does not occur in final position except when they meet /l, r/. For example, the union of /-rl/, /-rm/, /-rn/, and /-ln/ occurs, while we do not find the combination of /-pl/, /-tl/, /-tm/, and /-pn/.

I tried to analyze the consonant clusters in final position listed by Prator, Jr. and to find the rules of English phonotactic structure.

(Chart 4) Combination of three consonants in final position (-C₃C₂C₁)

1) Combination between C₃C₂ and C₁(/t, d, s, z/)

$C_3C_2 \downarrow$	$C_1 \rightarrow$			
	t	d	s	z
lp	helped		helps	
lt			belts	
lk	milked		milks	
lc(Itš)	filched			
lf	delft		Alf's tilths	
lθ				
ls	repulsed			
lš	Welshed			
lb		bulbed		bulbs
ld				holds

lj(ldž)			bulged	
lv			delved	delves
lm			filmed	films
ln			kilned	kilns
rp	harped			harps
rt				hearts
rk	worked			works
rc	marched			
rf	surfed			surfs
rθ	earthed			hearths
rs	forced			
rš	marshed			
rb		barbed		barbs
rd				cards
rg				bergs
rj		charged		
rv		carved		carves
rm		armed		arms
rn	burnt	turned		turns
rl		curled		curls
mp	tempt			camp
mf	triumphed			nymphs
nt				ants
nc	pinched			
nθ				months
ns	sensed			
nd				sands
nj		changed		
nz		bronzed		

ŋk	linked		links
ŋθ			lengths
ŋs	amongst		
pt			crypts
ps	lapsed		
pθ			depths
sp	clasped		wasps
st			tests
sk	asked		asks
kt			acts
ks	taxed		
tθ			eighths
ts	Ritized		
dθ			widths
ds	midst		
dz		adzed	
ft			lifts
fθ			fifths

(Chart 6) Combination of four consonants in final position (-C₄C₃C₂C₁)

C ₄ C ₃ C ₂ ↓ \ C ₁ →	t	s	z
lkt		mulcts	
lfθ		twelfths	
lts	waltzed		
rts	quartzed		
rst		thirsts	
rld			worlds
rpt		excerpts	
mpt		tempt	
mps	glimpsed		
nts	chintzed		
ŋkt		instincts	
ŋks	minxed		
kst		texts	
ksθ		sixths	

In the above chart, the phoneme which can occur in C₃ position is /l, r, m, n, ŋ, p, s, k, t, d, f/. Notice that C₂ phoneme is always voiceless except /-mbz/ when the phoneme /m, ŋ, k, f, p, s, t/ comes in position. As we can see, both C₂ and C₁ are voiceless or voiced when they meet each other respectively.

(Chart 5) 2) Combination between C₃C₂ and C₁ (/θ/)

C ₃ C ₂ ↓ \ C ₁ →	θ
If	twelfth
ks	sixth
rm	warmth

The four consonant clusters in final position are largely formed because of the addition of -s and -ed endings. When we try to pronounce each consonant correctly, we are hindered by juncture as /glimp+st/ in pronunciation of the word 'glimpsed'.

As I have described, there are many differences between the initial and final consonant clusters. The two stops such as /-pt, -kt, -bd, -qd/, fricatives like /-fθ, -θs, /vz, -ðz/, frictionless /-lm, -ln/, the and two homoganic

consonants such as /-mp, -nt, -ŋk, -mb, -nd, -ld, -nc(-ntf), -lc(-ltf), -nj(-ndʒ), -lj(-ldʒ), -mf, -pf/ only occur in the final position.

The combination of more than three consonants such as /-dst, -ŋst, -ksθ, -ŋkθ, -ksθs, -ŋkθs/ appearing only in final position can never be divided into that of two consonants existing as a separate cluster respectively after being divided from the combination of more than three consonants. It seems very important that only three combinations of /sp/, /st/, and /sk/ occur in both initial and final position.

V. Simplification of Consonant Clusters

Even if a speaker has learned to pronounce these consonant clusters, he may have difficulty when words with final clusters appear in the stream of speech next to words which begin with initial clusters. These consonant combinations at word borders can become quite complex.

It is extremely easy to make an error of pronouncing these consonant clusters by inserting a finishing sound between them. For example, we meet phrases with 'first grade', 'worked gladly', 'changed three', 'turned strong', etc.

over and over again in normal conversation.

In this case, speakers tempt to separate the words and thus make the combination easier with a vowel sound by unnatural pronunciations such as /fərstə greyd/. A careful listener, however, notices that the transition from /t/ to /g/ and from /d/ to /θ/ is being made quickly and directly so that no finishing sound may creep in in the pronunciation of a native speaker of English.

Even native speakers of English try to find ways to simplify their pronunciation. When a final consonant cluster precedes a word beginning with a vowel sound, he will most often pronounce the final consonant of the cluster as if it were the initial consonant of the second word: cooks it /kuks it/ as /kʊksit/. It seems useful to find these phrases and to practice them by using phonetic syllabication again and again. They can be easily found when the final consonant clusters formed because of the addition of the -s, -ed, or -t endings⁽¹¹⁾ precede the words with the initial vowel of next syllable.

Sometimes a final cluster made up of more than three consonants is reduced by the omission of one of the consonants. Take the following for examples of consonant cluster reduction: tempts /-mpts/ becomes /-mts/, glimpsed /-mpst/ becomes /-mst/, lifts /-fts/ becomes /-fs/, waltzed /-ltst/ becomes /-lst/, asked /-skt/ becomes /-st/, instincts /-ŋkts/ becomes /-ŋts/. These examples are largely when the medial consonant is a voiceless stop sound.

We often see another examples of this reduction: worlds /-rldz/ becomes /-ldz/, wormths /-rmθs/ becomes /-mθs/, and depths /-pθs/ is often pronounced /-ps/.

I would like to suggest that speakers whose mother tongue does not permit such complex sequences make use of this method to as great an extent as possible. However, the simplification of consonant clusters should not be overem-

phasized because this may result in unnatural pronunciation.

It is certainly worthwhile for the speaker of American English to understand that there is no way to avoid pronouncing these consonant clusters which are an essential part of the sound system of English in spite of the simplification of them.

VI. Conclusion

I have described the problems which occur in connection with the distribution of English consonants. The English language has a great variety of the initial and final consonant clusters: 43 in the initial position and 175 consonant clusters in the final position. Especially the addition of -s and -ed endings in the final position most frequently produce consonant clusters which speakers find hard to pronounce.

This means that most speakers whose native language does not permit such sequences have much difficulty in pronouncing the complex syllables of English.—syllables made up of such consonant clusters as CCC or CCCC.

Furthermore, they also have difficulty when words with final clusters precede in the stream of speech words beginning with initial clusters. There is therefore a danger of inserting an intrusive vowel between them, but speakers can avoid this unnatural pronunciation to a certain extent by making the transition from initial to final consonant clusters direct and quick.

In this study I examined the English phonotactic structure of these consonant clusters. I think it clarified the rules for the combination between the English consonants.

I tried to find way to simplify such complex sequences in final position as 'glimpsed' by consonant cluster reduction: glimpsed /-mpst/ becomes /-mst/. Simplification of consonant clusters seems possible by using phonetic syl-

(11) See "Table of Final Consonant Clusters" in this study.

labication too: find it /faynd it/ as /fayn-dit/. However, it should be pointed out that the speaker of American English has to adjust to various points of articulation for each consonant to the full before he tries to simplify such consonant clusters.

We may have noticed that it is usually impossible for new speaker to reach the pronunciation of the English language early acquired by native speaker as unconscious habits. We can be accustomed to the consonant clusters which are especially troublesome by only scientific study and practice.

It is therefore hoped that this study will be much helpful for the speakers of other languages which do not permit such a great number of consonant clusters of English.

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