Journal of Arts & Humanities

A Psycholinguistic Study of the Reflection of First Language Acquisition in Bilingualism: A Case Study

Reem Omar Maghrabi[1]

ABSTRACT

This study focuses on fossilization and its influence on language acquisition processes. It attempts to trace the phonological errors to decide what factors affect the occurrence of phonological fossilization. The study will trace the existence of phonological linguistic processes underlying segmental sound change such as segment addition, segment loss, segment movement, and segment substitution. The study is done on two types of speech; spontaneous and formal speech by a bilingual. Therefore, this will help to seek whether fossilization could be attributed to other factors rather than L1 acquisition processes. It has been found that L1 acquisition processes such as, overgeneralization, simplification and transfer play a considerable role in phonological fossilization in the aforementioned types of speech. It is found that fossilization occurs more frequently in formal speech than in spontaneous speech. The unconscious production of the second language speaker (i.e. the bilingual) is minimizing the phonological fossilized errors. Hence, there may be a correlation between the consciousness and the frequency of the fossilized phonological errors in the speech.

Keywords: Bilingualism, fossilization, language acquisition, language transfer, language interference, inter-language, target-language, phonological processes, segmental change, speech error.
Available Online: 27th January, 2016.

1.0 Introduction

[1] Faculty of Arts and Humanities, Department of European Languages, Saudi Arabia, Jeddah, Email: Rmoghrabi@kau.edu.sa.

One of most important concepts in the field of second language acquisition (SLA) is that of fossilization. The use of the term fossilization to refer to the resistance of L2 linguistic elements to approach target language norms, regardless of the amount of evidence experienced by the learner, has been conducted by many linguists. Also, a number of researchers have proposed models to account for the characteristic features of fossilization. Never the less, studies hardly explore the relation between the consciousness and the frequency of the fossilized phonological errors in the speech production. In addition, most of the theories of fossilization fail to address other important questions fundamental to the issue of why learners persist in repeating errors in spite of much positive and negative evidence, such as the differences in how the brain processes fossilized and non-fossilized linguistic elements.

Fossilization is a well known phenomenon that distinguishes L2 acquisition from L1 whereby L2 learners appear to get stuck, failing to perform like native speakers as far as certain linguistic properties are concerned (Trask, 1996). Selinker (1979), in his theory of an inter-language, also postulates the concept of 'fossilization,' wherein particular 'linguistic items, rules, and subsystems' that a L2 learner will 'tend to keep in their IL relative to a particular TL no matter what the age of the learner or amount of explanation and instruction s/he receives in the TL.' These may be items the learner never has completely mastered, or they can be items which the learner has seemed to master but cannot consistently reproduce, especially under conditions of anxiety, excitement, or extreme relaxation (Hatch, 1978). It is important, Selinker notes, to realize that these 'backsliding' events are not random or towards the NL of a speaker, but are instead towards an inter-language norm. Combinations of fossilized items are termed 'IL competences,' and fossilizations of these IL competences could lend themselves to the production of new dialects. Selinker (1979) also stated that fossilization is the stage at which some language learners stopped learning because their inter-language still contains some rules which are different from those of the target. Thus, developmental errors become enduring errors. For some learners, errors seem to be so ingrained that correction is almost impossible. Some learners may fossilize early, say, at the Intermediate level (Peck, 1977). Moreover, there are five central processes that influence the inter-language (IL) performance in relation to fossilizable items, rules and subsystems. These processes are:

1. Language transfer: if fossilizable items, rules and subsystems that occur in IL performance are a result of the NL.
2. Transfer of training: if fossilizable items, rules and subsystems that occur in IL performance are a result of identifiable items in training procedures.
3. Strategies of second language learning: if fossilizable items, rules and subsystems that occur in IL performance are a result of an identifiable approach by the learner to the material to be learned.
4. Strategies of second language communication: if fossilizable items, rules and subsystems that occur in IL performance are a result of an identifiable approach by the learner to communication with native speakers of TL.
5. Overgeneralization of TL linguistic material: if fossilizable items, rules and subsystems that occur in IL performance are a result of a clear overgeneralization of TL rules and semantic features.

Selinker (1979) claims that there are certain causes of IL errors. These are:

1. Overgenerlization: which refers to the use of previously available strategies in new situations.
2. Ignorance of rules restrictions: that is failure to observe restrictions of structures.
3. Incomplete application of rules: which refers to structures whose deviancy represents the degree of development of rules required to produce acceptable utterances.
4. False concepts hypothesized: which means that faulty comprehension of distinctions in the target language due to poor gradation of teaching items.

Roseberry-McKibbin (1995) states that, "Fossilization occurs when specific second language 'errors' remain firmly entrenched despite good proficiency in the second language." Fossilized items can be idiosyncratic to a child, or be common within a linguistic community (McKibbin, 1995.p.132)." Selinker

and Lamendella (1979) distinguish between fossilization and stabilization of interlanguage terms. Fossilization refers to permanent retention of non-native interlanguage forms. Stabilization refers to the case in which non-native linguistic items are not permanent but may "destabilize" or change into the authentic target language norm. Fossilization is more likely to occur if the students are not motivated to change (Neufeld, 1977).

This study examines some phonological errors to decide what factors affect the occurrence of phonological fossilization. Furthermore, it intends to explore if phonological errors could be triggered by consciousness. The study is done on two types of speech; spontaneous and formal speech by a bilingual. The data of this study is comprised of almost 6 hours of recorded speech dedicated to naturally occurring speech and formal speech equally. The recordings were done by the researcher on a bilingual linguist who has been teaching English linguistics for more than 20 years. Findings indicate that errors occur more in formal speech than in spontaneous speech. The correlation between the consciousness and the frequency of the fossilized phonological errors could support the communicating strategy in L2 learning. By exploring the relation between phonological fossilization and L1 acquisition processes, this study hopes to strengthen the emperist's view as mimicking should come before comprehension in L2 learning (Krashen, 1977).

2.0 Review of literature

A number of different models to account for the development of fossilization in an L2 learner's interlanguage have been proposed. Vigil & Oller (1976) presented an early model of fossilization which focused on the role of extrinsic feedback (described by Selinker and Lamendella 1979). Vigil & Oller argued that the interactive feedback received by a learner has a controlling influence on fossilization. Certain types of feedback were said to prompt learners to modify their knowledge of the L2, while other types encouraged learners to stand pat. Vigil & Oller suggested that there were cognitive and affective dimensions to feedback. In this scheme, a combination of positive cognitive feedback and negative affective feedback was most likely to promote fossilization, while negative cognitive and positive affective feedback combined to cause learners to modify their linguistic knowledge. In 1983, Tollefson & Firn compared the three main categories of models that had been proposed to account for fossilization. These were the *interactional*, *acculturation*, and *biological* models. The interactional model was of the type proposed by Vigil & Oller. In this model, it is conversational interaction that determines whether a component of the learner's interlanguage system is reinforced, contributing to fossilization, or destabilized, which leads to progress towards L2 forms. The second type of model discussed was the acculturation model. In this scheme, fossilization occurs when a learner's acculturation to the target culture ceases. L2 acquisition is driven not only by linguistic input, but by attitudes, behaviors, beliefs, and values. Since there is a conflict between the notion of destabilizable fossilization due to interactional, social, or psychological variables and the idea of permanent fossilization resulting from biological factors, Tollefson & Firn suggest a need for a clarification of terminology. They prefer to use the term *fossilization* to refer to the permanent state, and the term *jellification* to refer to the reversible condition. *Jellification* appears to correspond to the *stabilization* of Selinker and Lamendella (1979). In their conclusion, Selinker & Lakshmanan point out that fossilization may occur even when there is no language transfer. Several insightful observations on the nature of fossilization are offered by Nakuma (1998). Nakuma notes that in the important accounts of fossilization he discusses, all regard language transfer as a factor which contributes to fossilization. He takes as a starting point Selinker & Lakshmanan's (1992) pieces of the fossilization puzzle. The pieces that Nakuma attempts to link in his account are: 1) early fossilization due to restricted input; 2) backsliding phenomena, which underscore the difficulty in overcoming fossilization, and; 3) fossilization of certain structures despite an abundance of input. Nakuma argues that fossilization may not be a matter of acquisition, but a matter of avoidance on the part of the learner. In this view, the learner chooses not to acquire the L2 form because it is believed that the form has already been incorporated into his or her knowledge of the target language. When the learner perceives that there is a correspondence between L1 and L2 forms, the L1 form is transferred and is used in the performance of the L2. Because of this perception, the learner avoids acquiring the actual L2 form, as this is sensed to be a duplication of effort. Nakuma

claims that the learner's misconception of the relationship between L1 and L2 forms will persist until the learner no longer perceives the forms as being identical. In the meantime, the learner will ignore L2 input that runs contrary to his or her perception. The second assumption examined by Nakuma is that fossilization involves deviant forms of the target language. He believes that this view does not encompass all that there is to fossilization. Nakuma contends that there is both positive and negative fossilization. If transfer is a privileged or necessary factor in fossilization, as Selinker & Lakshmanan believe, and there can be either positive or negative transfer, then it stands to reason that fossilization can be either positive or negative. In light of these views, Nakuma states his hypothesis for the phenomenon of fossilization. In this scheme, the learner identifies the L2 form with an L1 form, and the L2 form need not be learned. Nakuma considers this a performance-level phenomenon. This hypothesis also assumes the existence of positive fossilization. This occurs when the learner considers the target-language form to be identical to the L1 form. The fossilization is positive because any difference between the L1 and L2 forms is imperceptible. Nakuma believes that regarding fossilization as both a positive and negative phenomenon more accurately reflects the scope of the phenomenon. This hypothesis leads to four implications, according to Nakuma. First, since each learner perceives the relationships between elements in the L1 and L2 differently, "the exact causes of fossilization in individual learners is [sic] beyond generalization" (p. 253). Second, external forces will not be able to destabilize a fossilized form as long as the learner maintains the identification between the L1 and L2 forms. Only when external forces are directed at the causes of this identification can defossilization be successful. Third, fossilized forms are not acquired deviant forms, but are forms which the learned has not acquired. As a result, needed forms are "filled in during L2 performance with L1 forms believed to be identical to them" (p. 253). Finally, fossilization is made up of both positive and negative manifestations. Consequently, the phenomenon of fossilization is broader than generally considered.

The above theories of fossilization all possess a certain amount of explanatory muscle, but each fails to address other important questions fundamental to the issue of why learners persist in repeating errors in spite of much positive and negative evidence, such as the differences in how the brain processes fossilized and non-fossilized linguistic elements. The experiment proposed in this paper will suggest one possible way to investigate this question.

2.01 Fossilization of inter-language phonology

One area of second language acquisition which research has largely overlooked until recently has been the area of phonology. Most recent studies have centered upon the acquisition of morphemes, the auxiliary and few higher-order structures (Hatch, 1978). Fossilization of IL phonologies in adult L2 learners is also one of the central issues in the study of inter-language phonology. In this regard, two related questions are raised: the first has to do with whether this fossilization is inevitable when adults learn a L2, and the second has to do with the causes of such fossilization. Researchers are divided in their answers to both questions. First, Scovel (1969) agrees on the fact that phonological fossilization is inevitable for adult L2 learners. He maintains that no adult ever achieves perfect native pronunciation in a L2. Other researchers disagree with Scovel (1969). Hill claims that this kind of fossilization is by no means inevitable, being the result of social and cultural factors in Western culture. She points to native peoples like Indians of the Amazon, who learn several L2s as adults and achieve native-like fluency. More recently, Neufeld (1977) has experimented with methods of teaching L2 pronunciation which are successful in helping adults to acquire native or near-native proficiency in pronunciation of new languages. In addition, Scovel (1969) suggests that lateralization-the completion of cerebral dominance-affects the learning of language. With lateralization, the brain looses its capacity for language learning, and this loss affects the pronunciation of the LL2 more than the syntax or vocabulary of the L2. Another explanation can be grouped as pointing to psychological causes of phonological fossilization. Krashen (1977) maintains that the close of the critical period is related to the onset of Piaget's stage of formal operations. Another explanation of phonological fossilization in adults is based on psychological habit formation and is related to the language transfer question. This theory has claimed that language transfer has its strongest effect on the pronunciation of a second language.

However, Neufeld (1977) reported that the problem is that we expose adults to inappropriate learning situations where they form inaccurate acoustic images of the target langue sound patterns. Peck (1977) says that children acquire native-like accents because they are not afraid of making mistakes and they do correct each other frequently. Adults on the other hand, do not acquire a native-like accent as they are afraid of making mistakes and they do not correct adults directly and frequently. Most of the studies examined the perception and repletion skills of subjects in limited environments. This study is done on spontaneous and formal speech for two reason. In formal speech where the subject is asked to read from a book, the reading of sentences involves the skills of both speech perception and production and this task elicits better performance in pronunciation that spontaneous speech which could be affected by physiological or psychological factors.

2.02 The phonology of English & Arabic

Study of the sounds found at English words shows that two groups of sounds with quite different patterns of distribution can be identified, and these two groups are those of vowel and consonant. The important difference between vowel and consonant is not the way they are made, but there different distributions (Roach, 1993). Thus, it is the interest of the study to look at the different contexts and positions in which particular sounds can occur. In other words the study of distribution. Both English and Arabic have their own phonological system. Looking at the Arabic and English phonemes and vowels, we could assume that errors in the pronunciation of second language learners are predicted on the basis of a contrastive analysis of the phonologies of native language (NL) and target language (TL). Most of learner errors in pronunciation were felt to originate from negative transfer-that is the learner's attempt to use inappropriate sound patterns of the NL in place of sound patterns of the TL Cambell (1998). A very simplistic contrastive analysis of the NL and the TL might reveal the patterns in the following table:

Table 01: Positive and negative transfer

Native language	Target language
/t/	/t/
/f/	/f/
/v/	---

In table (1) we have a case of positive transfer: both the native language and the target language have the phoneme /t/, so we would expect that the learner will have no difficulty with this sound in the target language. In example (2) we have an example of negative transfer which might be called "convergence" (Loup & Weinberrger, 1992) where there are two phonemes /f/ and /v/ in the native language, these two sounds are considered variants in the target language of a single phoneme /f/. In the present study, the prediction of sound change by the subject is done through tracing the changes in pronunciation of English words either in the conversational interactions or the formal speech. Trask (1996) states that all types of change in pronunciation are collectively known as phonological change, or, using a more traditional term, as sound change. A traditional view of sound change regards it as a gradual process as speakers seem to be unaware of ongoing sound changes (Hocket, 1965). Passy (1890) states that sound change occurs as a result of imperfectly trying to master the SL.

3.0 Data and methodology

This study intends to focus on the collection of data and the analysis of this data in an attempt to determine the processes shaping fossilized phonological features. It also examines the influences of such processes as transfer, overgeneralization, and first language acquisition processes on the shape of phonology. Sound change involves articulatory simplification and spelling pronunciation. This study will trace the existence of the four types of segmental change: segment addition, segment loss, segment movement and segment substitution. The data of this study is comprised of almost 6 hours of recorded speech. 3 hours are dedicated to naturally occurring speech, while the other 3 hours are dedicated to formal speech. As the recording of spontaneous speech is done, the addresser is not informed that she

will be recorded so that the speech would be more natural and results would be satisfactorily given. However, when the formal speech is recorded, the addresser is asked to read from a textbook or the recording will be done on the address while lecturing. In doing so, the researcher intends to examine the speech awareness factor to see if fossilization could occur due to pronunciation unawareness or due to some other factors. The recordings were done by the researcher on a bilingual linguist who has been teaching English linguistics for more than 20 years. The researcher meant to have the study done on a linguist to figure out if language awareness could play a role in minimizing the number of fossilized phonological errors. After recording both types of speech, transcription is done and phonological errors are traced in relation to segmental sound changes by using frequency count method. Based on Vigil & Oller (1976) model, the study will consider the positive and negative feedback to promote fossilization. Also observations on the nature of fossilization will be based on Nakuma (1998) who regards language transfer as a factor which contributes to fossilization.

4.0 Analysis

In this section, the fossilized phonetic errors are traced in spontaneous and formal speech in relation to segmental levels and sequential levels. Then, a comparison is drawn between the two types of speech to examine the frequency of occurrence of fossilized items to decide where fossilization occurs most. To do this, the total list of errors in spontaneous and formal speech are presented as a whole, then these errors are categorized in accordance to segmental and sequential phonological changes.

4.01 Spontaneous speech

Table 02: Underlying errors of spontaneous speech

Informant pronunciation	Dictionary pronunciation	gloss
/fɔsalaizzzeiʃən/	/fɔsilaizeiʃən/	fossilization
/matyu:r/	/mətʃuə/	mature
/preʃar/	/preʃə/	pressure
/græduit/	/grædʒuit/	graduate
/kunsidar/	/kənsidə/	consider
/individual/	/individʒuəl/	individual
/inzʒrt/	/insʒ:t/	insert
/kʌmbaneiʃən/	/kʌmbənеiʃən/	combination
/nʌmbar/	/nʌmbər/	number
/ʒenareiʃən/	/dʒenərеiʃən/	generation
/wurd/	/wʒ:rd/	word
/trænsleiʃən/	/trænzleiʃən/	translation
/livil/	/levəl/	level
/kɔp/	/kəup/	cope
/ulδu/	/ɔ:lδəu/	although
/singil/	/singəl/	single
/metifɔriikal/	/metəfɔrikəl/	metaphorical
/kavar/	/kavər/	cover
/intartein/	/intətein/	entertain
/kulɔ:kwal/	/kələukwiəl/	colloquial
/ʃɔ:z/	/ʃəuz/	shows
/esi/	/esei/	essay
/siginal/	/signəl/	signal
/anaδar/	/anaδər/	another
/bætʃulər/	/bæʃlər/	bachelor
/ɔ:varkʌm/	/əuvərkʌm/	overcome
/ɔ: rdar/	/ərdər/	order
/ʌndar/	/ʌndər/	under
/θɔ:t/	/θəut/	thought
/ʌternes/	/ʌtərans/	utterance

4.02 Formal speech

Table 03: Underlying errors of formal speech		
Informant pronunciation	Dictionary pronunciation	gloss
/igzæmpel/	/igzæmðl/	example
/preizez/	/preizez/	praises
/litrari/	/litrari/	literary
/kɔntribyu:ʃðn/	/kɔntrebyu:ʃðn/	contribution
/kɜ:rful/	/kɜ:rful/	careful
/mʌtar/	/mætðr/	matter
/ilʌstreiʃðn/	/ilðstreiʃðn/	illustration
/esi/	/esei/	essay
/ɔ :tubaiɔgræfikal/	/ɔ:tubaiɔgræfikðl/	autobiographical
/ærtistik/	/ærtistik/	artistic
/figʌrz/	/figðrz/	figures
/devʌlðpd/	/divelðpd/	developed
/wɔ:rkd/	/wɜ:rkd/	worked
/rɔ:/	/rðu/	raw
/kulekted/	/kðlektid/	collected
/pɔrtreial/	/pɔrteial/	portrial
/kɔnstantli/	/kɔnstðntli/	constantly
/nju :miralz/	/nyu:mðrðlz/	numerals
/amerikanz/	/amerikanz/	Americans
/treis/	/treis/	trace
/devʌlɔpment/	/develɔpment/	development
/speiʃiʌs/	/speiʃðs/	spacious
/leitar/	/leitðr/	later
/kudjðnðral/	kðudjðnerðl/	Co- general
/ri:l/	/ri:l/	real
/lʌkðli/	/lʌkðli/	luckily
/rekugnaizar/	/rekugnaizðr/	recognizer
/taital/	/taitðl/	title
/fikʃin/	/fekʃðn/	fiction
/kunsedrabðl/	/kðnsidðrðbðl/	considerable
/raiterz/	/raitðrz/	writers
/rait/	/rait/	right
/hauevðr/	/hauevðr/	however
/grædyual/	/grædjuðl/	gradual

Table 04: A comparison between the total occurrences of errors in spontaneous and formal speech				
Total occurrence of errors	Total occurrence of errors in spontaneous speech	%	Total occurrence of errors in formal speech	%
325	144	44.3%	181	55.7%

Looking at the two lists of spontaneous and formal speech, we can see that errors occur more in formal speech (55.7%) than in spontaneous speech (44.3%). It has been expected that the opposite will be most probable to happen. In Spontaneous speech, errors are more likely to occur because the speaker would concentrate more on communicating with hearers than concentrating on producing correct pronunciation of words. Moreover, the speaker's awareness is expected to be less than when reading from a formal text fro example.

4.03 Segmental change

As we break down the stream of speech into its component parts, we come up with sound segments. The four types of sound change are traced though the spontaneous and formal speech to figure the prominent type.

4.3.1 Segment addition

Segment addition is the process that involves the insertion of a consonant or vowel into a particular environment.

4.3.1.1 Segment addition in spontaneous speech

By analyzing the data of spontaneous speech, it is found that segment addition hardly if not never occurs. It happens only twice in the words (signal) as it is pronounced /seginal/ where the vowel /i/ is added or inserted between the two consonants /g/ and /n/. In (mature) /matyu:r/, /y/ is occurs between /t/ and /u:/.

Table 05: Segment addition in spontaneous speech		
Informant pronunciation	Dictionary pronunciation	gloss
/mat**y**u:r/	/mɔ**t**ʃuɔ/	mature
/sig**i**nal/	/s**ig**nɔl/	signal

4.3.1.2 Segment addition in formal speech

Table 06: Segment Addition in formal speech		
Informant pronunciation	Dictionary pronunciation	gloss
/speiʃ**iy**ʌs/	/speiʃɔs/	spacious
/grædyual/	/grædjuɔl/	gradual

The above table shows that segment addition also hardly occurs. It only occurs twice, in /speiʃ**iy**ʌs/ as the consonant /y/ is inserted between the two vowels /i/ and / ʌ/. In the second word /græd**y**ual/, the vowel /y/ is inserted between a consonant /d/ and a vowel /u/. segment addition could be related to over generalization as speakers generalize about the syllabication process found in Arabic.

Table 07: A comparison between segment addition in spontaneous speech and segment addition in formal speech				
Total occurrence of errors	Total occurrence of errors in spontaneous speech	%	Total occurrence of errors in formal speech	%
325	2	0.6%	2	0.6%

It is noticed from the above table that the occurrence of segment addition in both spontaneous and formal speech is equal. To justify this we can say that Arabic is a syllabic language and consonant clusters are hardly found. This syllabication process may transfer in second language production by overgenaralizing the idea that consonant clusters hardly occur in Arabic. However, because this segment addition is rare in our data and it could be said that the speaker avoids such kind of interference in most speech.

4.3.2 Segment loss

Segment loss involves the deletion of vowels and consonants. Apocope means the deletion of final vowels, while syncope means the deletion of word-internal vowels.

4.3.2.1. Segment Loss in spontaneous speech

Table 08: Segment Loss in spontaneous speech		
Informant pronunciation	Dictionary pronunciation	gloss
/kulɔ:k**wa**l/	/kəlʊk**wiə**l/	colloquial
/ma**t**yu:r/	/mə**t**ʃuə/	mature
/græ**d**uit/	/græ**dj**uit/	graduate
/indivi**d**ual/	/indivi**dj**uəl/	individual
/**j**enareiʃən/	/**dj**enərreiʃən/	generation

The above table shows some words where segment loss occurs in spontaneous speech. In /kulɔ:k**wa**l/, the vowel /i/ is dropped though it occurs between two consonants /w/ and ə. This contradicts what is said about Arabic as being a syllabic language. This could be viewed as the process of simplification as it could be easier for the speaker to drop the /i/ sound as the /w/ makes it kind of difficult to pronounce both /w/ and /i/ successively. In /ma**t**yu:r/, the /ʃ/ is dropped. Again, this could be viewed as a simplification process. Both /ʃ/ and /t/ are consonants and it would not probably make the pronunciation of the word simpler to keep the /ʃ/ sound. In /græ**d**uit/ and /indivi**d**ual/ the /j/ is dropped. In Arabic /dj/ is not found frequently, and may be this drives the speaker to overgenerlize about this and also simplify the pronunciation of words as it sounds easier to drop the/j/ sound fro both /d/ and /j/ are voiced sounds.

4.3.2.1 Segment Loss in formal speech

Table 09: Segment Loss in formal speech		
Informant pronunciation	Dictionary pronunciation	gloss
/kunsedrabəl/	/kənsi**d**ərbəl/	considerable
/græ**d**yual/	/græ**dj**uəl/	gradual

The above table, segment loss occurs in two in two words. In /kunsedrabəl/, /i/ sound is dropped although it is expected to make the pronunciation easier where consonant cluster occurs. However, it could be assumed that the speaker is simplifying the pronunciation more by dropping the vowel /i/ in order not to exert much effort. In /græ**d**yual/, the /j/ sound is dropped. This again may be explained by the fact the /dj/ sound is not frequently found and the speaker may tend to overgenerlize this when speaking English as SL. Segment loss could be related to simplification. Speakers omit sounds to make pronunciation much easier since they will be understood anyway.

Table 10: A comparison between segment loss in spontaneous speech and segment addition in formal speech:				
Total occurrence of errors	Total occurrence of errors in spontaneous speech	%	Total occurrence of errors in formal speech	%
325	5	1.5%	2	0.6%

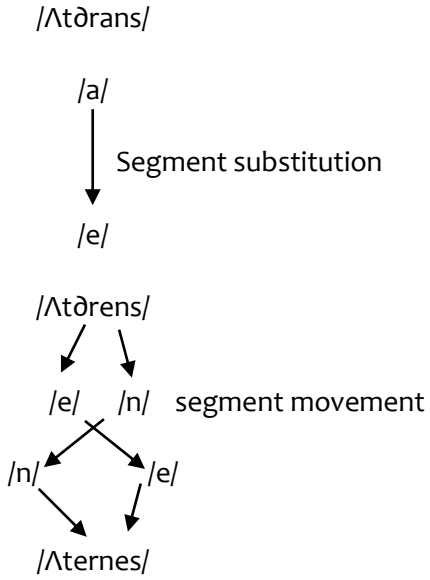
As the above table shows, segment loss occurs more frequently in spontaneous speech (1.5%) than in formal speech (0.6%). In spontaneous speech, speakers concentrate on communicating and due to rapidness, sounds may tend to drop. This may justify why segment loss occurs more there than in formal speech where the speaker could be given much more time and the focus is rather on pronunciation as the ideas are organized and present in front of the speaker.

4.3.3 Segment movement

Segment movement is identified as a change in the relative positioning of sounds. This process occurs only in spontaneous speech only once as the following table shows.

4.3.3.1 Segment movement in spontaneous speech

Table 11: Segment movement in spontaneous speech		
Informant pronunciation	Dictionary pronunciation	gloss
/Λternes/	/Λtðrans/	utterance



Examining segment movement, it is noticed that two processes happen. First, a segment substitution occurs as /e/ is substituted for /a/. Then, segment movement occurs where /n/ takes the place of /e/ and vice versa. By doing so, the speaker may have considered the word /utterance/ consisting of two words; (utter) + (ness)- suffix simplification reasons, ignored the fact that (-ance) is the suffix attached to (utter). It may be assumed that the speaker is trained to do this when the suffixes (-ness and –ance) occur, or she did not have the chance of being corrected by native speakers of English as the mispronunciation is not quite obvious. Segment movement does not occur in formal speech but in spontaneous speech where the speaker is not much aware of the flow of sounds but the flow of ideas, whereas in formal reading the opposite happens. In addition, this may happen as the speaker tends to insert a syllable by moving the sounds making it easier in pronunciation. Again this as an overgeneralization instance.

4.3.4 Segment substitution

A sound may substitute another sound segment in a particular phonetic environment. The substitution of one sound segment to another occurs without anything to trigger the change.

4.3.4.1 Segment substitution in spontaneous speech

Table 12: Segment substitution in spontaneous speech		
Informant pronunciation	Dictionary pronunciation	gloss
/fɔ**s**alaizeiʃðn/	/fɔ**s**ilaizeiʃðn/	fossilization
/preʃ**a**r/	/preʃ**ð**r/	pressure
/k**u**nsid**a**r/	/k**ð**nsid**ð**r/	consider
/in**z**ɜrt/	/in**s**ɜ:t/	insert
/kΛmb**a**neiʃðn/	/kΛmb**ð**neiʃðn/	combination
/nΛmb**a**r/	/nΛmb**ð**r/	number
/ʒen**a**reiʃðn/	/djen**ð**reiʃðn/	generation
/w**u**rd/	/w**ɜ:**rd/	word
/træn**s**leiʃðn/	/træn**z**leiʃðn/	translation
/l**i**v**i**l/	/l**e**v**ð**l/	level

/k**ɔ**p/	/k**ə**up/	cope
/**u**l**ð****u**/	/**ɔ:**l**ð****u**/	although
/sing**i**l/	/sing**ə**l/	single
/met**i**fDrik**a**l/	/met**ə**fDrik**ə**l/	metaphorical
/kav**a**r/	/kav**ə**r/	cover
/int**a**rtein/	/int**ə**tein/	entertain
/k**u**l**ɔ**:kw**a**l/	/k**ə**l**ə****u**kw**i****ə**l/	colloquial
/ʃ**ɔ**:z/	/ʃ**ə****u**z/	shows
/es**i**/	/es**ei**/	essay
/sigin**a**l/	/sign**ə**l/	signal
/græduit/	/grædjuit/	graduate
/kunsidar/	/kənsidə/	consider
/ʒenareiʃən/	/dʒenəreiʃən/	generation
/kavar/	/kavər/	cover
/anaðar/	/anaðər/	another
/bætʃulər/	/bæʃlər/	bachelor
/**ɔ**:rdar/	/ərdər/	order
/ʌndar/	/ʌndər/	under
/ʌternes/	/ʌtərans/	utterance
/livil/	/levəl/	level
/**ʝ**eneralaiz/	/**dʝ**eneralaiz/	generalize
/singil/	/singəl/	single
/individual/	/individʒuəl/	individual

It is obvious that substitution is the most frequent sound change in spontaneous speech. Tracing the substituted sounds, we see that the most frequently substituted one is the /ə/, followed by the diphthong /əu/ and finally by /dj/. The following table shows the percentages of the most frequently substituted sounds in spontaneous speech.

Table 13: percentages of the most frequently substituted sounds in spontaneous speech.

The substituted sound	No. of substitutions	% in relation to substitution In spontaneous speech	The given substitution	No. of occurrence	% in relation to the types of substitution
/ə/	24	75%	/a/ /i/ /u/ /e/	15 4 3 1	62.5% 16.6% 12.5% 4.1%
/r/ dark	12	37.5%	/r/ light	12	100%
/l/ dark/	9	28.1%	/l/ light	9	100%
/əu/	3	9.3%	/ɔ:/ /u/	2 1	8.3% 4.1%
/dj/	2	6.2%	/j/	2	8.3%

It is seen that the /ə/ is substituted by /a/ most of the time (75%) followed by dark /r/ and then dark /l/. This kind of substitution could be considered normal as the /ə/ sound does not occur frequently in Arabic. It is noticed too that /a/ could be easier than the /ə/ in pronunciation and that may trigger the frequent occurrence of it. Moreover, the diphthong /əu/ is not found in Arabic and the informant tend to substitute it with the long vowel /ɔ:/ the short vowel /u/. /dj/ is substituted by /j/ and this happens due to simplification as it it would be easier to pronounce it this way. Thus, the interference of Arabic is clear in that it drives the informant to put sounds that could be closer to Sounds found in Arabic than to try to pronounce the sounds as they are pronounced in English. This matches with what Firn (1997) states as the second language learner fossilize certain sounds because this sound may be found in his language and it would be preferable to pronounce it as it is in L1 rather than to pronounce it in the form of L2. It should be mentioned that there are other sounds that are substituted in spontaneous speech but they occur only once. For example, /i/, /s/, /z/, /ʃ/ and dark /r/.

4.3.4.2 Segment substitution in formal speech

Table 14: Segment Substitution in formal speech		
Informant pronunciation	Dictionary pronunciation	gloss
/igzæmpe**l**/	/igzæmp**ðl**/	example
/p**r**eizez/	/p**r**eizez/	praises
/lit**r**ari/	/lit**r**ari/	literary
/kɔnt**r**ibyu:ʃðn/	/kɔnt**r**ebyu:ʃðn/	contribution
/k3:**r**ful/	/k3:**r**ful/	careful
/m**Λ**tar/	/m**æt**ðr/	matter
/il**Λ**streiʃðn/	/il**ð**streiʃðn/	illustration
/es**i**/	/es**ei**/	essay
/Ɔ:tubaiɔgræfika**l**/	/Ɔ:tubaiɔgræfik**ðl**/	autobiographical
/æ**r**tistik/	/æ**r**tistik/	artistic
/fig**Λ**rz/	/fig**ðr**z/	figures
/div**Λ**lðpd/	/div**e**lðpd/	developed
/wƆ:rkd/	/w**3**:rkd/	worked
/r**D:**/	/r**ðu**/	raw
/k**u**lektid/	/k**ðl**ektid/	collected
/pƆ**r**trit/	/pƆ:**r**trit/	portrait
/kƆnst**a**ntli/	/kƆnst**ð**ntli/	constantly
/nyu :m**i**ral**z**/	/nyu:m**ðrðl**z/	numerals
/amer**i**kanz/	/amer**i**kanz/	Americans
/t**r**eis/	/t**r**eis/	trace
/dev**Λ**lƆpment/	/dev**e**lƆpment/	development
/speiʃi**Λ**s/	/speiʃ**ð**s/	spacious
/leitar/	/leitðr/	later
/k**u**djðnð**r**al/	k**ðu**djðner**ðl**/	Co- general
/**r**i:l/	/**r**i:l/	real
/**l**Λkðli/	/**l**Λkðli/	luckily
/**r**ekugnaiza**r**/	/**r**ekugnaizð**r**/	recognizer
/tait**al**/	/tait**ðl**/	title
/f**i**kʃ**i**n/	/f**e**kʃ**ð**n/	fiction
/k**u**ns**e**drabðl/	/k**ð**nsidðrðbðl/	considerable
/**r**aitðrz/	/**r**aitðrz/	writers
/**r**ait/	/**r**ait/	right
/hauevð**r**/	/hauevð**r**/	however
/grædyual/	/grædjuðl/	gradual

The above table shows that substitution occurs frequently in formal speech as well. Considering the substituted sounds and their equivalents, we may look at the following table:

Table 15: Percentages of the most frequently substituted sounds in formal speech.					
The substituted sound	No. of substitutions	% in relation to substitution In formal speech	The given substitution	No. of occurrence	% in relation to the types of substitution
/ð/	18	52.9%	/a/ /Λ/ /i/ /e/	10 3 2 2	55.5% 16.6% 11.1% 11.1%
/l/ dark	17	50%	/l/ light	17	100%
/r/ dark	22	64.7%	/r/ light	22	100%
/ðu/	3	8.8%	/Ɔ:/ /u/	2 1	66.6% 33.3%
/e/	2	5.8%	/Λ/	2	100%

The above table shows that dark /r/ is the most frequently substituted sound in formal speech followed by the /ð/, than dark /l/. The /ð/ is substituted mostly by /a/ as in spontaneous speech. This, however, repeats what is said before that it would be easier to pronounce /a/ instead of /ð/ especially that the /ð/ does not occur much in Arabic words. In Arabic, the /r/ is always light, and this light /r/ is transferred in English words. Also, /ðu/ is pronounced as /either /ɔ :/ or short /u/ and this too shows that because the diphthong is not found in Arabic, the informant chooses to pronounce it differently. Other substitutions are of /ei/, /ɜ:/, dark /l/, /r/ and /dj/.

Table 16: A comparison between segment substitution in spontaneous speech and segment addition in formal speech

Total occurrence of errors	Total occurrence of errors in spontaneous speech	%	Total occurrence of errors in formal speech	%
325	32	9.9%	34	10.4%

In formal speech, the informant is expected to be at more ease than in spontaneous speech. She is also focusing attention on pronunciation rather than communication and this in turn would most probably reduce the number of errors in specifically, substitution. However, the contrary happens. Substitution occurs more in formal speech than in spontaneous speech. This may show that when informant is aware of language production, she make more errors than when she is not. This also leads to the idea that the informant could be mastering English as a second langue unconsciously, but when producing it consciously, errors arise.

Table 17: A comparison between percentages of segmental processes in spontaneous speech and formal speech

Segment change process	No. of occurrence in Spontaneous speech	%	No. of occurrence in Formal speech	%
Segment addition	2	0.6 %	2	0.6 %
Segment loss	5	1.5 %	2	0.6 %
Segment substitution	32	9.8 %	34	10.4 %

We may conclude by saying that the most frequently occurring sound change in spontaneous and formal speech is substitutions. Contrary to expectations, it occurs more in formal speech than in spontaneous speech and this may drive us to assume that being aware of speech production triggers sound change and in particular sound substitution.

5.0 Discussion

Errors occur more in formal speech than in spontaneous speech. Errors are less likely to occur in spontaneous speech because the speaker would concentrate more on communicating with hearers than concentrating on producing correct pronunciation of words. This reflects the strategy of communicating with native speakers stated by Lenneberg (1973). In spontaneous speech, segment addition hardly occurs. This could be due to the possibility that the speaker prefers to be rapid as possible in spontaneous speech that she would not think of adding sounds that could slow her down. It is noticed that the occurrence of segment addition is equal in both spontaneous and formal speech though it is rare. The syllabication of Arabic process may transfer in second language production by overgeneralization. However, because segment addition is rare in our data, it could be said that the speaker avoids such kind of interference in most speech. Segment loss occurs more frequently in spontaneous speech than in formal speech. In spontaneous speech, speakers concentrate on communicating and due to rapidness, sounds may tend to drop. This may justify why segment loss occurs more there than in formal speech where the speaker could be given much more time and the focus is rather on pronunciation as the ideas are organized and present in front of the speaker. Segment loss shows the strategy of simplification as the informant drops sounds to make the

pronunciation easier. Segment movement does not occur in formal speech but in spontaneous speech where the speaker is not much aware of the flow of sounds as she is aware of the flow of ideas, whereas in formal reading the opposite happens. In addition, substitution is the most frequent sound change in spontaneous and formal speech. Interference of Arabic is clear in that it drives the informant to put sounds that could be closer to the Sounds found in Arabic than to try to pronounce the sounds as they are pronounced in English, and this repeats what Firn (1983) states. Substitution is the most frequently occurring sound change in spontaneous and formal speech and it occurs more in formal speech than in spontaneous speech. This may show that when the informant is aware of language production, she makes more errors than when she is not. This also leads to the idea that the informant could be mastering English as a second langue unconsciously, but when producing it consciously, errors arise. This would strengthen the emperist's view as they say that mimicking should come before comprehension in second language learning as it resembles child language acquisition.

6.0 Conclusion

Fossilization proves to be present whereby L2 learners appear to get stuck, failing to perform like native speakers as far as certain linguistic properties are concerned. Most of the five central processes that influence the interlanguage (IL) performance in relation to fossilizable items, rules and subsystems exist in spontaneous and formal speech. Intralanguage occurs in spontaneous and formal speech as some rules are formed by the informant based on previous rules found in English caused by ignorance and incomplete application of rules. Roseberry-McKibbin (1995) statement proves to be correct as second language 'errors' remain firmly entrenched despite good proficiency in the second language. Interactive feedback received by a learner has a controlling influence on fossilization. Through spontaneous speech, certain types of feedback were said to prompt the informant to modify her knowledge of the L2, while other types encouraged her to stand pat. The acculturation model may have value. Fossilization might be brought about by a lack of or inability to process input, or a large social or psychological distance between the informant and the culture of the L2. The role of language transfer is important in fossilization. Fossilized forms could be learned in a deviant form as the informant unsuccessfully learned the target-language form. Nakuma's (1998) arguments are true to an extent because fossilization may be a matter of avoidance on the part of the informant. The informant perceives that there is a correspondence between L1 and L2 forms. Nakuma (1998) claims that the learner's misconception of the relationship between L1 and L2 forms will persist until the learner no longer perceives the forms as being identical. Most of the theories of fossilization fail to address other important questions fundamental to the issue of why learners persist in repeating errors in spite of much positive and negative evidence, such as the differences in how the brain processes fossilized and non-fossilized linguistic elements. Scovel's (1969) claims could be true as phonological fossilization is inevitable for adult L2 learners. Physiological explanations could justify fossilization as when learners get older, certain pronunciation habits are practiced for years. The brain looses its capacity for language learning, and this loss affects the pronunciation of the L2 more than the syntax or vocabulary of the L2. A different type of explanation focuses on the adult learners' lack of empathy with the native speakers and culture of the L2. Adults have no motivation to change their accent when it communicates perfectly well who they are. Socio-emotional factors would seem to be powerful in determining degree of proficiency in pronunciation. Adults do not acquire a native-like accent as they are afraid of making mistakes and they do not correct adults directly and frequently. In spontaneous speech the skills of both speech perception and production elicit better performance in pronunciation than formal speech which could be affected by psychological factors.

It could be said that the high occurrence of sound errors in formal production of speech more than in informal production of speech may show that subjects' awareness of language production could result in more errors. This also leads to the idea that the acquisition of English as a L2 language should be unconscious. This would suggest that teachers of ESL should follow the emperists' view as they say that mimicking should come before comprehension in second language learning. This study hopes to give insights into the role of language transfer in fossilization by exploring the correlation between consciousness and fossilized speech errors. Also, it attempts to prompt further psycholinguistic work

on L2 language acquisition to deepen the understanding of the nature of phonological fossilization in order elicit better performance in pronunciation.

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