# MODULE 4 SPEECH PRODUCTION



## UNIT 1 WHAT DOES SPEECH PRODUCTION ENTAIL?

**CONTENT**



## 1.0 INTRODUCTION

In this unit, we shall look at what it entails to produce speech. You will learn that speech production is a complex exercise which involves a series of distinct operationsand representations. These operations occur at the lexical, syntactic, morphological and phonological levels. What is however of great interest to psycholinguistic studiesis the effortless ease with which speech production processes occur. This unit will describe the mental and articulatory mechanisms that govern how speakers encodeideas into meaningful sentence which are subsequently realized as utterances that will lead to speech comprehension.

## 2.0 OBJECTIVES

By the end of the Unit, you should be able to:

- discuss what speech production entails;
- explain the mechanism of speech production;
- mention the organs of speech production;
- distinguish between grammatical encoding and phonetic encoding; and
- identify the stages of speech production.

## 3.0 MAIN CONTENT

### 3.1 General Overview

Many of us do not bother to stop to think about how we generate spoken words. What are the mental and psychological realities that govern the production of speech? Sometimes when we pause to appreciate than human beings are born talkers then it is important to examine the processes involved in the articulation of speech. Even though important language organs like lips, tongue, jaws and the lungs are brought to bear in the complex mechanism involved, we tend to perform the operation spontaneously because speech making is so natural. However our study of speech production will help us to understand better how the brain processed information by which we interact with ourselves.

Levelt (1999) reveals that we produce two to three words per second in normal fluent conversation. These words come from a huge repository known as the mental lexicon which contains 50 to 100 thousand words in a normal literate adult. It is remarkable however that the biological basis for language production makes words processing inexhaustible through what is psycholinguistically termed recursive mechanism. The expression "The man is good" can be reproduced endlessly through human capacity for creativity in speech production. We can have "We all agree that **the man is good**."It is also possible to say "My teacher informed us during our lecture that **the man is good**."

Such an endless way of novel utterances being generated and added to the trigger sentence is a species-specific trait of human speech production.

The high speed and complexity in word production does not make it error free. It is reported that we err once or twice in 1000words. In an average of 40 minutes of talking per day, we will have produced some 50 million word tokens by the time we reach adulthood (Levelt 1999).

Study on speech production has its basis on psycholinguistic attempt to know the pattern of errors during utterances. When we speak, our intention is to convey a message. The message to be relayed has varied concepts and the mental lexicon is a reservoir of word from which only those needed for the intended message need be retrieved. These words have syntactic properties which contain morphological and phonological segments. All the distinct linguistic properties will be energized into the articulatory processes for each of the syllables, words, phrases and sentences contained in the utterance.

According to Levelt (1999) the following are the underlying processes of speech production.The speaker selects a word that is semantically and syntactically appropriate.

1. Retrieval of the word phonological properties
2. Rapid syllabification of the words in context
3. Preparation of the corresponding articulatory gestures.

From the foregoing you have now realized that speech production entails a complex but highly organized and systematized operation. It involves the speaker encoding an idea into an utterance. This utterance will carry the information the hearer will use to decode the speech signals by building the linguistic representations that will lead to the recovery of the intended message. The speaker formulates the message into a set of words well organized to convey meaning which is transformed into intelligible speech using articulatory mechanism. The hearer must reconstruct the intended meaning from the speech produced by the speaker because encoding and decoding are essential mirror images of one another (Fernandez& Cairns 2011).

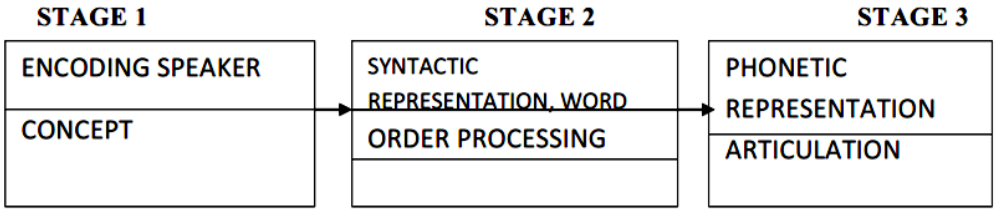
**SELF ASSESSMENT EXERCISE**

What does speech production entail?

## 3.2 The Process of Speech Production

The process of speech production begins when a conversation takes place and participants take turns as they interact. One of them will want to communicate an idea or give some item of information. There is always an initializing procedure known as pre- verbal message because at this point the idea has not yet been cast into linguistic form (Fernandez & Cairns, 2011).

The mental operations followed some steps in turning an idea into a linguistic representation. The process requires that both the speaker and the hearer must share the same lexicon and grammar. The mental representation must be transformed into a speech signal that will be produced fluently at an appropriate rate with correct intonation.




*Schema showing stages in the production of speech*

**Stage 1:** Speech production is activated by the idea of a message to be passed by the speaker. This is the conceptualization stage whereby lexical selection takes place. The semantic representation triggers a lexical search for words that best convey the intended meaning. For example, in a sentence like "the boy draws a picture", activation will centre on 'boy' 'draws' and picture'. These concepts came from the mental lexicon of the speaker.

**Stage2.** For any sentence to be meaningful there must be a systemic link between the string and its structural organization. In other words, a sentence like "The boy draws a picture." cannot be understood when restructured as *"picture draws boy the" because it has no acceptable pattern of the English grammar. At this stage, the speaker assigns the correct syntactic structure to the word retrieved from the lexicon. Words are arranged into hierarchically organized constituents whereby the subject and its verb must agree in number. Tenses and gender markers must be correct.

**Stage 3:** This stage creates the phonological representation of the utterance. Here, the utterance is given its phonetic qualities by spelling out the words as phonemes. When the appropriate morphophonological rules have been applied, a final string that will specify the way the sentences will be uttered will be produced. This representation is then translated into instructions to the vocal apparatus from the motor control areas of the brain. Being a biological operation, neural signals are activated and sent out to the lips, tongue, larynx, mandible and the respiratory system to produce actual speech.

Bock and Levelt (1994) give a broader but similar perspective of the processes of speech production. The first stage is termed Conceptual Preparation where the speaker is pre-occupied with the Linearization of the information to be expressed. He then decides on what to say first, what next and so on. The next stage is called Grammatical Encoding where lexical selection is done and assigned in the correct syntactic order. This is followed by Morphophonological Encoding where phonological codes are assigned to the speech produced. When a morpheme is successfully activated, the code becomes available. The fourth stage is described as Phonetic Encoding where the corresponding articulatory gesture is prepared. Next is Articulation where articulatory gestures are executed by an intricate apparatus consisting of the respiratory system providing the acoustic energy. The last stage termed Self-Monitoring is a control stage for speakers to attend to their own overt and internal speech. When errors are detected which may constitute obstacle to intended communicative effect, speakers can effect corrections and make a repair.

**SELF ASSESSMENT EXERCISE**

Explain the processes involved in speech production.

## 3.3 The Mechanism of Speech Production

The psycholinguistic basis of the study of speech production is anchored on the biological foundation of language acquisition. When we produce speech the mental process and the organs of speech involved interact in a complex and one-to- many relationships. In our study of the mechanism of speech production we shall examine fully that the goal of articulatory movements is to transmit mainly language information through speech. The mechanism of speech production has many levels, from the movement of the organs of speech to the articulation of sound, rhythm and intonation of the utterance.

Contrary to the general assumption, speech production does not start from the lungs. We have mentioned above about concept formation. Our speech begins from the brain.

Belincton (1994.950) quoted in Trujillo (2012) explains that after the creation of the message and the lexico-semantical structure in our mind, we need a representation of the sound sequence and a number of commands, which will be executed by our speech organs to produce the utterance. So we need a phonetic plan and a motor plan.

The physical production of sounds begins with an air stream released from the lungs, which goes through the trachea and the oral and nasal cavities.

The four processes involved in the mechanism of speech production are:

(1) Initiation
(2) Phonation
(3) Oro-nasal
(4) Articulation

Giegerich (1992) describes the initiation process as the moment when the air is expelled from the lungs as a result of "a pulmonic eggressive air stream." Although we have cases in some languages where we have ingressive sounds.

The phonation process occurs at the larynx which consists of two horizontal tissues called the vocal cords. These vocal cords are expressed as a simple vibration model and the pitch of the speech changes according to adjustment in the tension of the vocal cords. When the vocal cords close, vibration results in voiced sounds. When they open, the vibration stops and voiceless sounds are produced.

The oro-nasal process involves the passage of the air into the oral or nasal cavity. At this stage it is possible to differentiate the /m/ sound from /n/ in the production which is the most obvious when we produce speech. This takes place in the mouth where we can differentiate most speech sounds. The mouth is a chamber that consists of manyorgans producing speech. These are the articulators, the lips, teeth, tongue, soft andhard palates. All these make the distinct qualities of the speech we produce because they can be characterized into manner and places of articulation.

**SELF ASSESSMENT EXERCISE**

Explain the mechanism of speech production.

## 4.0 CONCLUSION

We have tried to look at what it entails to produce speech. We have seen that speech production is a complex but highly systematized operations. It has been shown thathuman language is information driven. When a speaker attempts to communicate anidea, it is pictured in his mind and he selects the words from his mental lexicon. He then arranges these words to convey a meaningful sentence in an acceptable syntacticpattern. Through the phonetic representation the speaker transfers the message to his vocal apparatus through which the actual utterance is produced.

## 5.0 SUMMARY

In this unit, we examined the speech production processes and the mechanism of producing speech. We learnt that encoding of words begin as a preverbal messagewhen an idea that has not been cast into linguistic form is generated. Subsequently, the mental operations will select the lexical items and transform them into correctsyntactic patterns. Speech signals are them triggered to incorporate all the phonetic details necessary for actual production.

## 6.0 TUTOR MARKED ASSIGNMENT

1. What is pre-verbal message?
2. State Levelt's underlying processes of speech production.
3. Discuss syntactic representation in speech production.
4. Describe the mechanism of producing speech.
5. Mention some organs of speech production.

## 7.0 REFERENCES/FURTHER READING.

Bock, J. K. & Levelt, W. J. W. (1994). *Language Production: Grammatical Encoding*. New York: Academic Press.

Fernandez, E. & Cairns, H. (2011). *Fundamentals of Psycholinguistics*. West Sussex: Wiley Blackwell

Gregerich, H. J. (1992). *English Phonology: An Introduction*. Cambridge: Cambridge University Press.

Levelt, W.J. (1999). 'Models of Word Production' in *Trends in Cognitive Science* Vol. 3, No6 Pp. 223-228

Trujillo, F. (2012). The Production of speech sounds retrieved on 20th Novembers, 2012 from http//www.compapp.dcu.ie/Phonetics/process.htm/

# UNIT 2 LEXICAL SELECTION AND ASSEMBLAGE OF WORDS

## CONTENT



## 1.0 INTRODUCTION

In this unit, you will learn further about the complexities involved in the process of speech production. Specifically, we shall look at lexical selection and assemblage of words. Producing a word to express meaning requires the selection of appropriate lexical concepts and the assembly of syntactic framework relevant to the discussion. Though research still continues to determine all that is involved in lexical selection in producing speech, two prominent theories have tried to examine the phenomenon. These are cascade selection theory and discrete selection theory. We will discover the frequency rate of some words and the motivations behind them.

## 2.0 OBJECTIVES

By the end of the Unit, you should be able to:

- explain lexical selection in speech production;
- distinguish between cascade and discrete selection process;
- discuss the three levels of language production;
- describe the processes of lexical selection; and
- give examples of words that are semantically close and semantically far.

## 3.0 MAIN CONTENT

### 3.1 General Overview

In the course of speech production, it is important for the speaker to be able to select lexical items corresponding to the intended message. The processes whereby the speaker selects words from the mental lexicon have been labelled under the term lexical selection. During the course of this selection, psycholinguistic studies are concerned with those factors affecting the efficiency and speed with which lexical selection takes place. We are to determine how word frequency can influence lexical selection. A significant problem in lexical selection is how well the concept to be generated matches the desired lexical output.

Griffin and Bock (1998) report that there is no single lexical item in English to describe "son's wife's mother" which in Russia is called "Svatja'. In the Nigerian setting (Yoruba), kinship terms referring to uncle's child, sister's brother, mother's sister and father's brother are realized as hyponyms such as 'brother', (Iyaagba) big mummy' (Baba agba) big father, etc.

Lexical selection is determined to some extent by the activation level of the target node. This means the higher the activation of a target lexical node at the moment of selection, the easier the retrieval (Dell, 1990). Word frequency and context constraint are quite important in lexical selection.

Words that are high infrequency are processed with greater speed and accuracy than those of low frequency. This is because those words that are more predictable are identified more rapidly and successfully than less predictable words. A speaker's lexical selection is somehow driven by the thought to be conveyed than by the store of words in his lexicon. During word production, there is need for lexical selection and phonological encoding to express any meaning.

Theories of word production examine the relationship between lexical frequency and word selection including assemblage of words. Retrieving a word during normal speech requires at least two lexically specific steps:

1. Lexical, semantic and syntactic information (meaning/word order)
2. Phonological information (sounds)

Dell et al (1997) corroborate that speech production involves a step in which lexical entries for words called lemmas are selected based on message specification and making grammatical information available. The second step is that in which phonological information is retrieved

and assembled. However, the relationship between these two steps is controversial. One school argues that phonological encoding can begin before word selection is completed though the two stages are notmutually exclusive.This is termed the cascade theory (Dell et al, 1997). For example, upholstery can be called a ‘couch’ or a ‘sofa’.

The second school posits that selection and phonological encoding takes place in discrete stages (Roelofs, 1992). Word selection precedes phonological encoding with selection completed before encoding begins. There is no influence from activity during lemma selection on phonological encoding. For example, in a picture naming experiment, the word ‘sheep’ was not interfered with even though a phonologically related word ‘sheet’ was presented to the subjects. At no point was there simultaneous sensitivity to both semantically and phonologically related distractors. This is consistent with the idea of independent processing stages. However, it is still debatable to determine the extent to which lexical selection is affected by word frequency in speech production (Ferreira & Griffin, 2003).

## 3.2 Features of Cascade and Discrete Models

Many studies on lexical selection and assemblage of words tend to agree on the existence of two functional stages described above. However, there are divergent views on the relationship between them. Two prominent theories have emerged:The cascade lexical selection model and the discrete lexical selection model. These two models have some features that need to be considered.

The discrete model: - According to Dell (1997) the following features have been identified as typical of the discrete model of lexical selection:

1. Only one word is activated
2. The grammatical features are selected prior to word form encoding.
3. Lemmas compete for selection because there are no links of the lexical entries.
4. Effects at different levels shouldn’t affect one another.

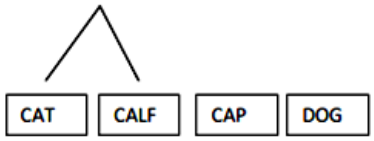
For example, in a picture naming experiment containing the labels:


The frequency rate of retrieving CAT to match the correct picture was high.

The Cascade Model:

1. All active lemmas spread activation to their respective word forms.
2. Word forms also compete for selection.
3. Semantic and phonological effects are predicted to interact.

In the experiment, the word frequency rate was slow because word forms compete for selection e.g.




You are expected to take note here that studies in the area of speech production are not exhaustive and that these models are not mutually exclusive.

Mahon et al (2007) in their experiment report that frequency of words is determined according to their semantic familiarity or otherwise.

| | Picture | Semantically Close | Semantically far | Unrelated |
|---|---|---|---|---|
| 1. | Bottle | Jar | Saucer | Corn |
| 2. | Dress | Start | Glove | Fence |
| 3. | Cow | Goat | Seal | Pearl |
| 4. | Arrow | Spear | Grenade | Saucer |
| 5. | Stool | Chair | Futon | Caption |

## 3.3 The Processes of Lexical Selection

During speech production the speaker goes through two processes. The first one is the stage whereby he creates the skeleton of the utterance to be spoken while the second stage is where he puts flesh to the skeleton. The former is referred to as lexical selection entries in the speaker's vocabularies and assemblage of words while the latter is phonological encoding which is the assembly of sound forms and the generation of intonation (Bock & Levelt, 1994).

A speaker who intends to say "meals on wheels" but says "wheels on meals" usually knows that the lexical selection and the way those words were assembled is faulty. It is however through the analysis of speech errors that appropriate lexical selection is determined because it is intended to account for normal speech production model. For example, how do speakers choose the correct words corresponding to intended message?

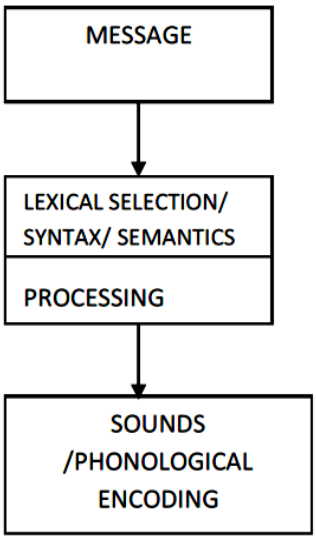



*Figure 4: Schema showing processes of lexical selection*

In Figure 4 above, you can see the three levels of speech production being described. These are the message level, the processing level and the phonological level. The message captures the features from the speaker's intended meaning and provides the raw materials for the processing of lexical selection. The lexical selection level deals with identification of lexical concepts that are suitable for conveying the speaker's meaning. Processing at this level involves the creation of a well arranged set of word order items and assemblage of words. The third level is phonological encoding which spells out the phonological structure of the utterance and the prosody of the large units. For instance, when you say:

"Ojo will go to Yaba. He will also visit Ikeja." The first step in lexical selection involves identifying the lexical concepts such as form class, nouns pronouns, verbs etc. since Ojo is male, any selection of 'she' for the second sentence will be wrong.

Bock and Levelt (1994) exemplify the process of lexical selection in their explanation of a network model of lexical selection.

First stage: sheep (domestic animals, wool pelt, produce milk)

Second stage: sheep (syntactic properties noun)

Third stage: sheep = (Phonological encoding) /ʃi:p/

This description differs from semantic properties of 'goat' even though the two are animals. Related words that bear similar description may come to mind but there is a distinction between lemmas and lexemes. This could be likened to a situation when you try to remember the name of someone you met before. If wrong names areproposed you ignore then because they will not fit into the mould. As you try to recall

someone named ‘Musa’ people might suggest ‘Moses’ but you will be able to discern that it doesn’t fill the gap. This implies that appropriate lexical selection must fit the intended message.

Consider the following errors of lexical selection. Where the speakers became conscious of such errors, they attempt to correct them:

“Get out of the clark (car)”

“A branch fell on the tree (roof)”

“He’s a man to emanate (emulate)”

“Release the hostages unarmed (unharmed)”

## 4.0 CONCLUSION

Lexical selection and assemblage of words constitutes an important aspect of speech production. We were able to learn the complexities that arise in the process of lexical selection and why some words are more frequent than others. Attempt was made to explain the theories of lexical selection and the distinction between the discrete model and the cascade model. You also learnt about the three levels of language production. We discussed the process of lexical selection and provided examples of errors of lexical selection.

## 5.0 SUMMARY

When we speak, it is important to select the appropriate word that will best convey the intended message. Lexical selection and assemblage of words is concerned with the study of speech production that provides on a insight into the process whereby the speaker selects words from their mental lexicon. The discrete and cascade models also examine the rate of word frequency in lexical selection and conclude that the models are not mutually exclusive. The unit further discusses the processes of lexical selection and exemplifies with the three stages of message, lexical selection processing and phonological encoding.

## 6.0 TUTOR MARKED ASSIGNMENT

1) What is lexical selection?
2) What are the motivations for word frequency?
3) Explain the processes of lexical selection.
4) Describe the levels of speech production.
5) Give 5 examples of words and their synonyms and antonyms.

## 7.0 REFERENCES/FURTHER READING

Dell, G.S. (1990) Effects of Frequency and Vocabulary Type on Phonological Speech Errors. *Language and Cognitive Processes* 5, 313-349.

Ferreira, V. S. & Griffin, Z. M. (2003) Phonological Influences on Lexical (mis) Selection. *Psychological Science* 14, 86-90

Roelofs, A. (1992). A Spreading Activation Theory of Lemma Retrieval in Speaking. *Cognition*, 42, 107-142.

Bock, K. Levelt, W. (1994) Language Production: Grammatical Encoding. In M. A. Gernsbacher (ed), *Handbook of Psycholinguistics* (PP 945-984). New York: Academic Press.

Levelt, W. J. (Ed). (1993*). Lexical Access In speech Production.* Cambridge: Blackwell.

Mahon, B, Costa, A. & Peterson R. (2007) Lexical Selection IsNot by Competition. *Learning, Memory and Cognition*. 3, 503-535

Griffin, Z. M. & Bock, K. (1998) Constraint, Word Frequency and the Relationship between Lexical Processing Levels in Spoken Word Production. *Journal of Memory and Language* 38,313-338.

# UNIT 3 'SLIP OF TONGUE' PHENOMENON

## CONTENT



## 1.0 INTRODUCTION

In this Unit, we shall learn about the slip of tongue phenomenon. We shall examine the motivation for the causes of slips and the various types. During our discussion,you will discover that the study of slips otherwise known as speech errors is of importance to psycholinguists because it falls under the category of languageproduction. It will be shown here that slips of tongue are not random. They are systematic and follow a set of rules which make them a good source of data inlanguage study and development.

## 2.0 OBJECTIVES

By the end of this Unit, you should be able to:

- define slips of tongue;
- explain how slips occur;
- discuss types of slips;
- mention five speech errors; and
- examine the importance of slips.

## 3.0 MAIN CONTENT

### 3.1 General Overview

When a speaker deviates from the correct pattern of an utterance, we talk of slip of tongue. Such a phenomenon occurs very often in our day to day conversation. Among the Yoruba, they often talk of asiwi (mis-statement) and 'asiso', (slips). This happens when they say "put clothes on your body" and "cover your body with cloth" (fi asosara) and (fun aralaso) respectively. When this is the case, we tend to observe that such

deviations are involuntary as speakers make effort to correct them once they are conscious of the speech error.

Wikipedia (2012) reports that the term 'slips of tongue' is derived from a Latin expression 'lapsus linguae'. They are described as conscious or unconscious deviations from the apparent intended form of an utterance which may be spontaneous or intentional as in puns or word plays. Speech errors are common among children who have not yet refined their speech. Sometimes, slips frequently continue into adulthood thus leading to embarrassment and often betray regional or ethnic origins. For example, in northern Nigeria, it is not uncommon to meet speakers who exchange /f/ for /p/ as in "can I use your fen?" (pen). A typical Igbo speaker who met me when I was just settling down in my new residence at Ayobo-Ipaja, Lagos talked patronizingly "Oga, come and buy lice" (rice). Likewise, you are likely aware of a popular Fuji musician in Yoruba who alluded to Ibadan people's speech errors like "kini so? (show), cikin (chicken) etc.

Wang (2012) submits that slips of tongue occur in the course of information processing in the brain and the production of the utterance. Slips may be conscious when the speaker enters conscious activities the moment the slips occur. The person will perceive it and sometimes makes attempt to correct them. Speakers who commit unconscious slips are not aware of such errors and often fail to do any correction. It is the conflict and confusion of concepts during the period of processing information which underlie speech errors.

Carroll (1994) argued that slips are important source of data in psycholinguistic because they have implications for theories of speech production. It is possible to determine the error pattern which can be explained through cognitive and perceptual mechanism acting on linguistic knowledge. This implies that a current language experience may be a source of slip as well as language competence acquired in the past

**SELF ASSESSMENT EXERCISE**

Explain slips of tongue.

## 3.2 How Slips Occur

Sigmund Freud (see Fromkin, 1973) attempted a psychological explanation of why some speakers commit slips. He described speech errors as a disturbance which could be "as a result of a complicated psychical influence of elements outside the same word, sentence or sequence of spoken words". Some neurolinguists believe that slips occur when there is a disordering of the hierarchical units of the order of vocal

movements in pronouncing the word, the order of words in the sentence or the order of sentences in the paragraph.

Wikipedia (2012) explains that all speakers have a spell of speech errors occasionally. These occur when they are nervous, tired, anxious or intoxicated. During interview sessions, you will observe that even you may not be sure of some utterance which can make you to commit slips. I was in a panel one day and one of the candidates gave a different name from the one stated in his curriculum vitae. When queried it was discovered to be his younger brother's name. Stress session can actually be a cause of slips.

Fromkin (1973) posits that psycholinguistic studies have revealed that slips are non random and predictable. Although it could not be determined when an error will occur or what the particular error will be, one can predict the kinds of error that will occur. Such predictions are based on our knowledge of the mental grammar utilized by speakers when they produce their utterance. For example, two segments may be transposed as in "Yew Nork" instead of "New York". In some instances, segmental errors can involve vowels as well as consonants e.g. "bud begs' in place of 'bedbugs' etc.

Speech production comes very rapidly and the mechanism involved is very complicated. Through speech errors we can get an insight into the nature of language processing and production. Slips of tongue provide linguists with empirical evidence for linguistic theories and give opportunities to learn about language competence and performance models Studies on speech errors explain the sequential order of language production processes. We now have clues on how language interaction modules operate. During speech it is now evident that speakers typically plan their utterance ahead but slips come in between competence and performance which is significant psycholinguistically.

Carroll (1986) identifies four features of slips of tongue

1. Linguistics elements tend to come from a similar linguistic environment. This means that elements at the initial, middle and final segments interact with one another e.g. " take my bike (bake my bike)
2. Distinctive elements and discrete items which interact with one another tend to be phonetically or semantically similar to one another e.g. consonants exchange with consonants, vowels go with vowels e.g. You have hissed my mystery lecturers ( you have missed my history lectures).
3. Slips are consistent with phonological rules of the language e.g. " I didn't explain clarefully enough" ( I didn't explain carefully enough)

4. Stress patterns of slips are consistent. Segments that interact in the utterance received major and minor stress e.g. "burst of beaden' when the target is 'beast of burden'. These features underscore the fact that slips of tongue are systematic because language production is systematic.

Fernandez and Cairns (2011) assert that words are often organized by their meanings during language processing so that close associates are stored near one another. Slips can give us clues into this meaning based organisation.A word retrieval error somehow results in the selection of semantically and structurally similar word. Instead of "All I want is something for my elbows" you will get ("All I want is something for my shoulders")

(2) "Put the oven on at a very low speed" when the speaker intends to say "put the oven on at a very low temperature."

In each example the speakers has erroneously selected a word that is of the same grammatical class (nouns) and that shares many aspects of meaning with the intended word referred to as the Freudian slips.

**SELF ASSESSMENT EXERCISE**

Discuss the features of slips of tongue.

## 3.3 Types of Slips

There are different terminologies and different ways of classifying slips of tongue. This is because few of them actually fall into one category. They tend to overlap because of the dynamic nature of speech production. The two broad types identifiable are at the phonological and lexical levels. These are further sub-divided into smaller units

Phonological slips are noticed in the production of the sound segments such as phonetic features phonemic units, consonant clusters, rhythms and tones. Lexical errors comprise morphemes, words and phrases. If the unit containing the error is the same as that of the target, then we talk of substitution. If there is an extra unit in the utterance, we call it addition while any omission in the intended utterance is deletion

Wikipedia (2012) reports that one can infer from slips that speakers adhere to a set of linguistic rules. In language production, morphemes are systematically combined with other morphemes and given specific pronunciation. This order governs the occurrence of speech errors e.g. a speaker who tries to say"He likes to have his team rested may say (He likes to have his rest teamed).Note that the positions of 'team' and 'rest' contrast with 'rested' and 'teamed'

(1) Both kids are sick (both sick are kids).

These rules which tell language users how to produce speech are likely responsible for a systematic pattern of the mental organisation of language. When a speaker engages in substitution, it is one segment substituted in the same category as nouns for nouns adjectives for adjectives.
The following typology of slips of tongue has been identified:

| | TYPE | DESCRIPTION | EXAMPLE |
|---|---|---|---|
| 1. | Substitution | a unit of the sentence contains an intruder | The queer old dean instead of (the dear old queen) |
| 2. | Deletion | a unit is omitted in the utterance | He wasn't there (he was there ) |
| 3. | Perseveration | an earlier segment reappears in a latter one | Pulled a tantrum (pulled a pantrum) |
| 4. | Addition | a new unit is added | The optional number (the moptional number) |
| 5. | Swapping | two words are exchanged | To let the cat out ofthebag(toletthe house out of the cat) |
| 6. | Shifting | a segment or unit is relocated somewhere else in the utterance | She decides to hit it (she decide to hits it) |
| 7. | Anticipation | a later segment isused toreplacean earlier one | Reading list (leading list) |
| 8. | Blending | where more than one item is untended, twoitemsarefused together | Person/people (perple) |
| 9. | Malapropism | inappropriate word selection | The two cars collide (collude) |
| 10. | Spoonerism | takenfrom Rev. W. Spooner noted for puns and word plays | Drink is the curse of The working classes (work is the curse of drinking classes) |

Now, you will realize that it is possible to detect some overlapping in the categorization highlighted above. This is not unexpected as features in one segment have a way of being reflected in a similar segment.

**SELF ASSESSMENT EXERCISE**

Describe any five types of slips with examples.

## 4.0 CONCLUSION

A slip of tongue phenomenon has engaged the attention of psycholinguists for a long time. It is an important source of data in our study of speech production and language development. Much is now known about the cognitive procedures involved in metal processing of language. Through speech error we can now assess better and distinguish between language competence and performance. Such a study will contribute to the establishment of models of speech production. Attempt will also be made to effect corrections where necessary as some slips are made consciously.

## 5.0 SUMMARY

This Unit was preoccupied with the discussion about the slips of tongue phenomenon. We explained to you that they are also called speech errors and they can be conscious or unconscious. You also learnt that slips occur during the course of speech production as the information being processed may suffer conflict and confusion of concepts. It is also possible those speakers who commit slips of the tongue do so because of nervousness, fatigue or stress. Even you will realize that sometimes when you are in the presence of a dignitary words may fail you and you experience a spell of slips.

However, slips can be categorized into different types with a measure of some overlapping. A segment in substitution in one utterance may features in another segment in shifting. Your study of slips of the tongue is another way to broaden your knowledge in the exploration and perception of theories of language production.

## 6.0 TUTOR MARKED ASSIGNMENT

1. What are slips of the tongue?
2. Describe the occurrence of slips in speech production.
3. Explain the importance of slips.
4. Discuss the various types of slip with examples.
5. Examine Carroll's (1986) features of slips.

## 7.0 REFERENCES/FURTHER READING

Bock, J.K. (1982). Towards A Cognitive Psychology of Syntax. *Psychological Review*,89 1-47.

Carroll, D (1994). *Psychology of Language*. London: Brooks Cole Publishing.

Fernandez, E. & Cairns, H. (2011).*Fundamentals of Psycholinguistics*. West Sussex: Wiley Blackwell.

Fromkin, V. (1973). *Speech Errors as Linguistic Evidence*. The Hague: Mouton.

Levelt, W. J. (1989). *Speaking: From Intention to Articulation*. Cambridge: M. I. T press.

Wang, X (2012).*On the consciousness of slips of the tongue*retrieve on 1th November, 2012 from Http.//Lc.Zju.edu.en/z/juic

**UNIT 4 THE HUMAN BRAIN AND THE CAUSES OF APHASIA**

**CONTENT**



## 1.0 INTRODUCTION

In this Unit, we shall examine the role of the human brain in speech production and the causes of aphasia. We shall find out about the limitless capacity of the human brain in processing and producing speech and how any serious damage to this vital organ of the body could cause irreparable word loss and language impairment. We will look at the types of aphasia from the mild ones to the serious types and identify the causes of Aphasia. Attempt will also be made to see how Aphasiacs could be helped to enable them use language to communicate reasonably and manage the unfortunate impediment that confronts them.

## 2.0 OBJECTIVES

By the end of this Unit, you should be able to:

- appreciate the role of the human brain in speech production;
- explain the regions of the human brain responsible for language;
- discuss the causes of Aphasia;
- state the different types of Aphasia; and
- distinguish between Broca's Aphasia and Wernicke's Aphasia.

## 3.0 MAIN CONTENT

### 3.1 General Overview

Researches in the realm of the human brain have pre-occupied scientists for ages (Aphasia 2012) reports of the historical issues in brain and language. These include:

1. Localization: where is language?
2. Innateness: how did it get there?
3. Domain specificity: is language special?
4. Is language separable from speech?
5. Is language essential for humanity?
6. How many forms can language take?
7. Can language disorder be cured?

These and other unexplored areas continue to be of interest to linguists, psychologists, sociologists, neurologists and psycholinguists. The human brain has been described as one of the marvels of creations. It is so outstanding that every second, millions of information pour into your brain from various sources. It is wonderful to imagine how you handle all these with ease.

Studies are still being carried out to determine how the human brain processes language and all that goes on in the production of speech. Findings reveal that what is known is little compared to what is still unknown. A flurry of activities goes on in our head every second. It is a big place is a small place.

Encarta (2010) explains that the human brain is more powerful than a supercomputer. It is made of about 100billion nerve cells. The surface of the brain is wrinkled and deep grooves divide it into sections. Your brain is protected by bone called the skull. The human brain has three sections namely: - the cerebrum, the cerebellum and the brain stem. The cerebrum covers the largest part of the brain and it controls your speech, language and emotion. The auditory and visual nerves are also controlled by the cerebrum. The cerebellum coordinates your movements and gives you a sense of balance while the brain stem controls your automation and things you carry out without being aware of them like heart pumping blood, blinking eyelids and reflexes.

Newsmedical (2012) reports that in human beings it is the left hemisphere that usually contains the specialized language areas. The brain acts as the command centre for language and communication which controls both the physical and mental components of speech.

You may want to ask why animals do not speak even though they have brains like us. Years ago philosopher like Bouilland explained that we should reply that animals lack suitable external organs and that language phenomenon arose from a more potentcause which is the absence of internal organ, the cerebral centre which dictates and coordinates the complicated movements by which a person expresses the operations of their understanding (Aphasia, 2012).

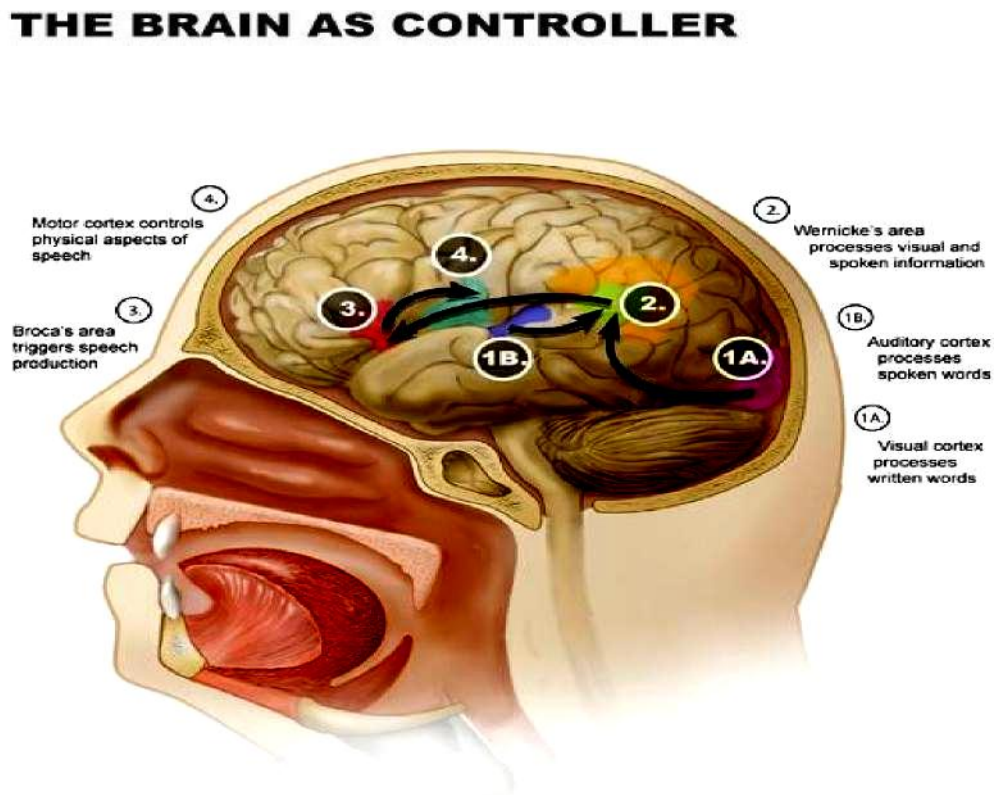


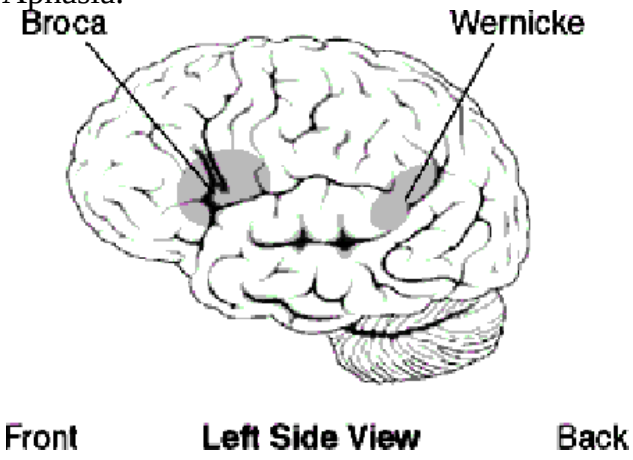

IMAGE CREDIT: Zina Deresky, National Science Foundation.www.newsmedical.net

An area of great interest in psycholinguistics is the complexity of the human brain and how it understands, accesses, processes and produces language. Researchers have however made great stride in identifying the regions of the brain involved in speech. This came accidentally by a French neurologist, Paul Broca, in 1861 when he discovered patients who could understand spoken language but had difficulty speaking. He later observed that damage has occurred in a certain part of the brain on the left hemisphere. This became known as Broca area.

Thirteen years later in 1874, a German physician Carl Wernicke found patients with fluent speech but severe comprehension problems. A close observation showed that there was damage to another part of the left hemisphere which later was known as Wernicke's area.

These patients with brain damage in specific areas have difficulties with very specific aspects of language and this showed that the human brain is a highly compartmentalized system. Patients who experience damage to Wernicke area are saidto suffer from a disorder called Wernicke Aphasia which is characterized by the sufferers' ability to produce grammatically correct sentences, which are often nonsensical but include inverted words. On the other hand, patients who experience

damage on the Broca area are described as suffering from Broca Aphasia.




Credit: Lingraphica (2012)

**SELF ASSESSMENT EXERCISE**

Describe the three main parts of the human brain.

## 3.2 The Causes of Aphasia.

You need to fully understand the term ‘aphasia as we try to examine its causes.

Lingraphica (2012) defines aphasia as a disorder that results from damage to portions of the brain that are responsible for language. This occurs on the left side (hemisphere) of the brain. Usually this disorder begins suddenly as a result of stroke or head injury but it could also develop slowly if a patient suffers from brain tumour or infection.

Association Internationale Aphasie (2012) reports that Aphasia is a two-syllable word‘a’ (non) and ‘phasia’(speaking), which means someone can no longer say what they want to say. Aphasia is as a result of brain damage. The origin of such brain damage ismostly a blood vessel disorder called a stroke cerebral haemorrhage, cerebral infraction or apoplexy. In medical term, this is called Cerebral (brain) Vascular (blood vessel) Accident (CVA). Other causes for the development of aphasia are traumainjury to brain as a result of road accident or a brain tumor. Our brains need glucoseand oxygen to function. If as a result of CVA, circulation of blood is disrupted, brain cells die in that location. For most people, the area for the use of language is located atthe left hemisphere of the brain. When injury occurs in this area, then we speak of aphasia.

A person suffering from aphasia is called an Aphasic. Aphasia often impairs the expression and understanding of language as well as reading and writing. The neurological nature of aphasia makes it a very challenging experience as sufferers find it difficult to get their message across. Though aphasia gets in the way of a person's ability to use or understand words, it does not impair the person's intelligence. Please, note that suffers should be treated with patience and understanding when they have difficulty in finding the right words to complete their thought. Before you can determine whether a person is an aphasic, please look out for the followings symptoms

1. Is the patient having trouble speaking?
2. Is the patient struggling to find the appropriate term or word?
3. Is the patient using strange or inappropriate expressions in conversation?

Some people who suffer from aphasia have problems understanding what others are saying and this may be due to tiredness or overcrowded environment. Some aphasiacs are known to have difficulty in using numbers and doing simple calculations.

The language disorder experienced by aphasiacs could be diagnosed by a specialist using a series of neurological tests. When the patient is subjected to questions or given some tasks to perform by naming different object and items, the doctor will be able to determine if the person has aphasia. The doctor will also establish the severity of the disorder.

When a case of aphasia has been properly diagnosed it is better managed by a speech therapist who will meet the patient regularly and encourage them to communicate. Sessions will also train the patient in ways to interact without speech commonly called sign language.

**SELF ASSESSMENT EXERCISE**

Explain the causes of Aphasia

## 3.3 Types of Aphasia

Psycholinguistic studies have tried to classify aphasia into different types to enable specialists determine their levels of severity. This is to enable speech therapists assist sufferers and encourage them in producing speech.

Lingraphica (2012) identified the following types of aphasia

1. **Anomic Aphasia:** Itis the least severe form of aphasia. Sufferers are unableto use the correct word for the concept they intend to

describe. These could be people,objects, places or events. The patients usually understand speech very well but writing ability is poor.

2. **Global Aphasia:**This occurs from damage to extensive portions of the speech processing areas of the brain. It is described as the most severe of the speech disorders. It occurs immediately after a stroke. The patient loses almost all language functions and has difficulty understanding as well as forming words and sentences. The condition is so critical that it is quite difficult to communicate with the individual. They can only produce a few recognizable words, understand little or no spoken speech, and are unable to read or write.

3. **Broca's Aphasia**: This is also referred to as non-fluent or expressive Aphasia. The patient is able to understand speech and know what they want to say but are not able to find the words needed to form a complete sentence. Patient's access to vocabulary is restricted and formation of sound is extremely challenging which result in poor speech quality. Broca aphasics often omit small words such as 'is', 'and' and 'the'. Full length sentences like "I will take the dog for a walk" and "there are two books on the table" are expressed as "walk dog" and "book book two table". However, the patient has no difficulty in understanding the speech of others fairly well.

4. **Wernicke's Aphasia:**This is also known as fluent or receptive aphasia. The patient experiences serious comprehension difficulties and is unable to grasp the meaning of spoken words. The person will be able to produce fluent connected speech which however will be full of meaningless words that sound like sentence but make no sense. They tend to add unnecessary words and even create their own. In a sentence like " you know that smoodlepinkered and that I want to get him round and take care of him like you went before" Instead of "the dog needs to go out, so I will take him for a walk". It is difficult to follow what the patient means. Wernicke's aphasiacs are often unaware of their mistakes and have great difficulties understanding speech.

5. **Conduction Aphasia:** The patient has difficulty in the connection between the speech comprehension and production areas. This may be due to damage to areas that transmit information between Werincke's areas and Broca's area. Auditory Comprehension is near normal and oral expression is fluent with occasional expression errors leaving the person with poor repetition ability.

6. **Primary Progressive Aphasia**(PPA)**:** This is described as a rare degenerative brain and nervous system disorder which makes speech and language skills decline overtime. Sufferers have problem naming objects and misuse word endings, verbtenses, conjunctions and pronouns. PPA is a progressive type of speech loss in which the frontal and temporal lobes of the brain shrink.

The classification above could not be said to be mutually exclusive as they are bound to overlap depending on the region of the brain affected by the injury and the extent of the damage

*APHASIA TAXONOMY AND CHARACTERISTICS*

| **Type of Aphasia** | **Repetition** | **Naming** | **Auditory Comprehension** | **Fluency** |
|---|---|---|---|---|
| 1. Anomic aphasia | Mild | Moderate | Mild | Fluent |
| 2. Global Aphasia | Poor | poor | poor | non-fluent |
| 3. Broca | Mod-severe | Mod-severe | Mild-difficulty | Non-fluent, Effortful slow |
| 4. Wernicke | Mild | Mild | defective | fluent |
| 5. Conduction aphasia | Poor | poor | relatively good | fluent |
| 6. Primary Progressive Aphasia | Moderate | Poor | Poor | non-fluent |

Becky and Spivey (2008) submit that you should endeavor to help persons suffering from aphasia. They are intelligent and capable of learning like other normal human beings. They, therefore, need a lot of encouragement. You should try and assist anyone suffering from aphasia in the following ways:

- Strengthen the remaining language skills.
- Find ways to compensate for the skills that are lost.
- Improve memory of object names with pictures and flash cards.
- Learn to interact with them through sign language.
- Simplify your own language by using short, uncomplicatedsentences.
- Allow aphasiacs plenty of time to think and speak.
- Avoid correcting the person's speech.
- Encourage any type of communication like gestures, pointing,drawing, and using signs.

**SELF ASSESSMENT EXERCISE**

Discuss any four types of Aphasia

## 4.0 CONCLUSION

The human brain remains the most complex language processing and producing organ for human beings. This powerful organ is however very sensitive and complicated that any damage or injury to it may lead to language impairment with severe consequences for the patient. When such injury occurs, a disorder known as aphasia may result. We can however lessen the suffering of these people by giving them therapy session and showing a lot of understanding in our interaction with them.

## 5.0 SUMMARY

In this unit, attempt was made to let you know the role of the human brain in language comprehension and production. You also learn that human brain is a complex but delicate organ capable of storing a wonderful amount of information. However, when an individual suffers an injury or damage to the left hemisphere responsible for processing language, they will lose the ability to speak coherently and experience speech disorder. The unit taught you about the different type of aphasia depending on the severity and extent of damage to the brain. It closes by giving you some useful tips to help people who suffer from aphasia.

## 6.0 TUTOR MARKED ASSIGNMENT

1. Describe the human brain as a complex organ.
2. Explain the regions of the brain involved in speech production.
3. What are the causes of aphasia?
4. State the different types of Aphasia?
5. Suggest some ways to help Aphasiacs.

## 7.0 REFERENCES/FURTHER READING

Aphasia (2012). retrieved October 10, 2012 fromhttp://cr1.ucsd.edu/courses/aphasia

Association Internationale Aphasie. (2012). *An Overview of Aphasia* retrieved October, 9 2012 fromwww.aphasia-international.com

Becky, L. & Spivey, M. (2008).*What is Aphasia*? New York: Super Duper Publications.

Dingwali, W. O. (1993). The Biological Basin of Human Communicative Behaviour

In J.S. Gleason and B. Ratner (eds*) Psycholinguistics*, 41-88 New York: Harcourt Brace.

Lingraphica. (2012). 'Aphasia Defined' National Institute of Deafness and Other Communication Diseases.

National Institute on Deafness and other Communication Disorder. (2008). *Aphasia.* Bethesda: Clearing House Communications.

Newsmedical (2012*). Language and the Human Brain* retrieved October, 10 2012 fromwww.newsmedical.net.