Introduction to the Psycholinguistics

BBI 3215 (Unit 1-10/10)
Program Bachelor

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MODUL PEMBELAJARAN : BBI 3215 INTRODUCTION TO THE PSYCHOLINGUISTICS
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43400 UPM Serdang
INTRODUCTION TO THE COURSE

Course Specifications

Course Code : BBI 3205
Course Name : Introduction to the Psychology of Language
Course Credit : 3 (3+0)

Course Objectives

The focus of this course is the relationship between psychology and language. Specifically, the course will cover the following areas:

- The processes of language perception
- The processes of language production
- First language acquisition
- Second language acquisition
- The role of the brain and memory

Course Evaluation

In this course, you will be evaluated through two assignments, a mid-semester examination and a final examination. Please refer to the study schedule for the specific dates.

The Assignment

Each assignment should NOT exceed two pages. In completing them, you may draw information from as many sources as you feel necessary. Complete bibliographical information, however, should be given. Each assignment will make up 20% of your total points for the course.

The Mid-Semester Examination

This examination will be a mixture of 30 multiple choice questions and 3 short answer questions, covering essentially Introduction and Chapters 1-7 of the text and Units 1, 2a, 2b, 3, 8 and 9 of the module. It will make up 30% of your total points for the course.
The Final Examination

This examination will be a mixture of 30 multiple choice questions and 3 short answer questions, covering essentially Chapters 8-12 of the text and Units 4, 5, 6, 7, 10 of the module. It will make up 30% of your total points for the course.

Required text and references

The text for the course is:


You are encouraged to use any other references at your disposal, especially when doing the assignments. I have included some below.

References


How to Use the Required Text

At the beginning of each unit of the module, you are assigned pages from the text to read. Do this first before you go to the module. It is important that you do the readings as examination questions will be based on the text and the module. You are also encouraged to discuss important topics covered in the text, especially at your tutorials.
INTRODUCTION TO THE MODULE

The module is made up of 12 units, which are divided into 3 parts for your convenience. These 3 parts cover the 3 areas pertinent to the course. As you go through the module, you will find content that are either similar to what is in the text or that which is not in the text at all. For the similar content, what I have done in the module is to present you with supplementary materials and a different perspective. For the new content, what I have done is to complement what is lacking in the text. Therefore, as you go through the module and the text, always try to synthesize the information given so that you can better understand the whole course.

Outline of the Module

Unit 1  Language and Psychology: Basic Considerations

PART I  FIRST LANGUAGE ACQUISITION

Unit 2a  Child Language Acquisition: Stages of Acquisition
Unit 2b  Child Language Acquisition: Learning Theories
Unit 3  Animal Language: The Articulate Primate

PART II  LANGUAGE AND COGNITION

Unit 4  Grammar, Competence and Performance
Unit 5  The Structure of Language
Unit 6  Perception and Comprehension: The Construction Process
Unit 7  Production: Speech Plans
Unit 8  The Brain and Memory
Unit 9  Language and Thought: Linguistic Universals

PART III  SECOND LANGUAGE ACQUISITION

Unit 10  First and Second Language: Acquisition v. Learning
Unit 11  Second Language Pedagogy
Unit 12  Language and Psychology: Future Directions

Study Schedule

I have provided below a rough schedule of study, which you are free to rework according to your needs. You should, however, always bear in mind the areas that will be tested in the mid-semester and final examinations.
<table>
<thead>
<tr>
<th>Event</th>
<th>Date/Week</th>
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</thead>
<tbody>
<tr>
<td>First face-to-face</td>
<td>08/05/99 – 09/05/99</td>
</tr>
<tr>
<td>Self study (as stated under Evaluation)</td>
<td>Weeks 1 – 9</td>
</tr>
<tr>
<td>Second face-to-face</td>
<td>12/07/99 – 13/07/99</td>
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<tr>
<td>Assignment I to be handed in</td>
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<tr>
<td>Mid-Semester Exam</td>
<td>06/08/99 – 08/08/99</td>
</tr>
<tr>
<td>Self study (as stated under Evaluation)</td>
<td>Weeks 11 – 18</td>
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<tr>
<td>Assignment II to be handed in</td>
<td></td>
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<tr>
<td>Final Exam</td>
<td>17/09/99 - 19/09/99</td>
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INTRODUCTION TO THE WRITER

Background information

Sharifah Zainab Syd. Abd. Rahman was formerly a lecturer with the English Language Department, Faculty of Modern Language Studies, Universiti Putra Malaysia. She is currently Head of Programme (TESL) at IDEAL. She holds a B.A. in Secondary Education from Wichita State University, Kansas and an M.A. in TESL from the University of Illinois at Urbana-Champaign. She was with the Department for ten years and has taught BBI 330 Speech Development, BBI 354 The Teaching of Aural-Oral Skills and PBI 330 TESL Methodology courses for the B. Ed. (TESL) programme and BBI 3202 English Phonetics and Phonology and BBI 3403 Speech Communication 1 courses for the B.A. (English) programme at UPM. Her areas of interest and research are linguistics, aural-orla skills and communication.

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UNIT 1 LANGUAGE AND PSYCHOLOGY: BASIC CONSIDERATIONS

Objectives

After reading through this unit and doing the exercises, you will be able to:

- Define the psychology of language.
- Relate the 3 conclusions to the psychology of language.

Reading

Aitchison Introduction (pgs. 1 - 5)
Chapter 1 (pgs. 6 - 22)
Introduction

When people began becoming interested in the study of language, it was first thought that human beings learn language through imitation. The human child learns how to talk and understand what is being said by imitating the sounds and structure of the language surrounding him or her. This was the belief of the Behaviorists, who stated that behavior, even language learning behavior, can be controlled by the stimulus-response mechanism. But further observations show that this is definitely not the case. It was observed that children, after a certain period, started producing sentences they have never been exposed to before. It became obvious that something else is going on where language is concerned. A lot seems to be happening in the mind, and therefore unobservable. You can't possibly open up a person's head to see how the sentences are produced. So the linguists used the next best thing - the sentences themselves - to try to guess at how humans learn and understand language.

This, basically, is the area of psycholinguistics, i.e. the relationship between psychology and language. By analyzing a person's use of language, we try to make guesses at how he or she acquires produces and comprehends language. Specifically, we need to look at the relationship of language to communication, the primacy of speech (and listening) and the nature of language.

Language and Communication

1. Two attributes that set us apart from other life forms on earth are our ability to communicate simple and abstract ideas, and the fact that we use language to do so. Language stands at the center of almost all our activities, whether we are listening to a lecture, attending an interview or having a tete-a-tete with a close friend. As the main vehicle of human communication, language is indispensable.

2. But what is language? What is its origin? How is it acquired? To answer these questions, we must first consider the communication process.

3. We communicate using language in two basic ways, i.e. by speaking and writing. In any communication event, there is always a speaker or writer (also known as an encoder) and a listener or reader (also known as an encoder). This is true even when you are talking to yourself, in which case you become both the speaker/writer and the listener/reader. So there is actually nothing wrong with having conversations with yourself; you are just performing dual roles.

4. When communicating, a speaker/writer will encode, i.e. construct, his or her ideas about perceptions, feelings and intentions into words and sentences. A listener/reader will then try to decode, i.e. reconstruct the words and sentences into the ideas about perceptions, feelings and intentions that he or she is supposed to comprehend. We can see clearly here that speaking and writing involve
producing some form of input while listening and reading involve receiving and comprehending some form of input. So speaking and writing are known as productive skills while listening and reading are called receptive skills.

5. However, we know that having the productive and receptive skills is not enough to make sure that our communication is successful. I am sure that we all have had the experience of having a conversation with somebody whom, although with seemingly excellent productive and receptive skills did not make much sense. Or you are at a reception and your partner for the evening has just embarrassed you with a terrible faux pas. It seems then that having the skills is not sufficient; you need also to know how, when and where to use the skills.

6. We can now formulate our first conclusion regarding our unique capability of using language to communicate:

**Conclusion 1**

Communicating using language must necessarily involve two abilities:

- having knowledge of productive and receptive skills.
- knowing how, when and where to use both skills.

This is an important distinction to make, as both abilities have a direct link to what we shall discuss later. Let us now turn to another aspect of the nature of language.

7. At any instance that we communicate, 90% of the time we do so through speech, i.e. orally (this is of course true for people with no hearing and speech defects). Studies on how children acquire language show that they learn through the development of the skills as given below:

Listening - Speaking - Reading - Writing

We will look at child language acquisition in Unit 2. Anthropological studies also show that civilizations around the world developed on an oral tradition long before a writing system was invented. In fact, when compared to the oral transfer of information, writing is a recent development and there are still many people in the world today who can speak but can’t read and write.

8. We can now formulate our second conclusion regarding our unique capability of using language to communicate:
Conclusion 2

- Speech (and its counter skill, listening) are our primary and most natural form of communication.

9. A further examination of speaking and listening skills will show that they are complex activities as a large part of both activities are not observable. When someone says, "I love you," we can't actually observe how, when and where the speaker gets the words and puts them together; we just hear the words and smile. The choosing and arranging have been done in the mind.

10. Listening is equally complex. You can't see how your listener has understood what you said. All that you get is the response, either verbal or non-verbal, by which you gauge how much of your message has been interpreted correctly.

11. We will begin to appreciate the complexity of the skills when we wonder at how our friend can mishear our "I'm all covered in chalk dust!" as "I'm all covered in chocolate!" or when your good friend misinterprets your sincere "You look healthy!" as an "You have really put on weight!" insult. We wonder why some people talk out of turn, i.e. interrupt when someone else is talking. The answers to these questions can't be found through observations as most of process takes place in the mind. It is not observable. The only thing that we have for analysis is the sentences that are produced. Based on analysis of these sentences we can make guesses as how we acquire, produce and comprehend language.

Think of an instance when you are communicating. List down your flow of ideas, from your head to when you voice them. Do the same for when you are listening.

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12. So the third conclusion regarding our unique capability of using language to communicate is:

**Conclusion 3**

- Speech is the most basic way we realize language.
- To analyze language, we must analyze the skills of listening and speaking.

13. Based on the conclusions we have made, we can now go back to our earlier question about the nature of language. We can see now that any study of language must necessarily include a study of how language is used and comprehended. And this is the domain of psycholinguistics.

**The Psychology of Language**

14. The psychology of language is fundamentally concerned with

- the mental processes you and I utilized to listen, comprehend and remember.
- the mental processes you and I utilized to speak.
- the mental processes involved in acquiring/learning language.

Explaining these processes will shed light on other equally important and interesting questions, such as: How does language influence thought? How does thought influence language? How does language fit into other human activities? Why does language have the structure that it does? Do animals have language? And so on.

15. We will look at some psycholinguistic studies that have been carried out to find the answers to the questions in later units.

**Summary**

It can't be denied that man's ability to use language to communicate has set him apart from the other life forms and has awarded him the status of the fittest in the pyramid of survival. Through language, with its infinite flexibility and creativity, man has managed to disperse information down the ages and far into the future. It is therefore crucial that we can identify what this ability is exactly, i.e. how we acquire language, how we use language and how we comprehend language. This is at the heart of psycholinguistic inquiry.
PART I

FIRST LANGUAGE ACQUISITION

As the use of language to communicate is unique to humans, one of the first areas we should look at when studying language is how it is acquired. We will do just that with this part of the module. Specifically, we will look at how children acquire language and whether animals do so.

There is no doubt that acquiring language seems effortless and most natural for children. And they seem to do this automatically, albeit each at his or her own pace. How do children accomplish this miraculous feat? This is the question that has haunted many a linguist and psychologist. Although much has been discovered, there are still numerous unanswered questions. Finding answers to these questions about acquisition is important as it will help us to understand just what this ability is, what language is and, to certain extent, how we keep knowledge i.e. our mental structures or what we actually have in our mind. This will in turn shed some light on how our mind works and how we view the world or reality. The most pertinent result of inquiry into how children acquire language will be its application to second language learning. It is believed that by knowing how children acquire language, we can know how adults learn language.

Going beyond ourselves, animals too seem to have a system of communication. We know that bees, whales and dolphins have elaborate systems by which they communicate with one another. Although many think that language is unique to the human species, there are others who judge it as just a different form of animal communication. Could these animals then also use language? If so, how? Answers to these and many other questions could help us better understand our ability to acquire and use language. This is especially relevant to the species placed closest to us on the evolutionary ladder – the primates. If we are truly descended from the big apes (thanks to Darwin), studies looking into the ability of apes to acquire and use language will show us how we have evolved into the human animal that we are today.
UNIT 2A  CHILD LANGUAGE ACQUISITION

Objectives

After reading through this unit and doing the exercises, you will be able to:

- define language acquisition
- list the characteristics of adult talk
- discuss the functions of adult talk
- list the stages of language acquisition
- discuss the characteristics of each language acquisition stage

Reading

Aitchison  Chapter 4 ( pgs. 66 - 90 )
            Chapter 6 ( pgs. 110 - 134 )
Introduction

Through the centuries, from the Greeks to the present day, thinkers, linguists and psychologists have argued and puzzled over how children acquire language. Earlier in this century, it was widely believed that they do this essentially through a process of imitation and induction. Like other forms of behavior, which is learnt, it was thought that children observed the communicative behavior and listened to the talk around them and slowly came up with the rules and patterns of the language. In this respect, language learning is thought to resemble the learning of other cultural behavior e.g. tying your shoelaces, brushing your teeth etc.

But this widely held view changed dramatically at the onslaught of research evidence that show strikingly similar patterns where language development is concerned. Detailed research has shown that despite differences due to culture, there is a definite similarity in the way children acquire language all over the world. Linguists and psychologists are now focussing on these similarities across language (linguistic universals). They have come to the conclusion that this universality could only be the result of innate structures of the human mind that does not require learning. In other words, the linguists and psychologists are saying that humans are predisposed to language, that they have a language 'blueprint' or device that is coded in the genes and gets activated when exposed to linguistic input. By studying how children learn to use their language, it is hoped that we can get to the nature of this blueprint or mental structures.

To this end, in this unit we will look at what is meant by language acquisition, the language we use to communicate to children and the stages of language acquisition that children display.

Language Acquisition

We are all aware that when we say a child is able to speak, we actually mean more than just that he or she is able to produce sounds of the language. We mean that he or she can produce an infinite set of sentences (few of which can be heard before) at the appropriate speech events that occur in our daily lives. We also mean that he or she is able to understand and interpret correctly both new and familiar utterances that he or she hears. On top of this, when we say our child can speak, we also mean that he or she has now complete control over the morphological, phonological, syntactic, semantic, and pragmatic rules of the language. The child must know when to speak and to listen; when and how to interrupt and greet; how to recognize teasing and orders; and so on. Every child must learn how to make his or her utterances achieve their intended
objectives and how to understand under what circumstances a particular utterance serves different functions. In short, when we say a child can speak, we mean that the child has both language and communicative competence.

How do children acquire this competence? There is now widespread agreement among psychologists and linguists that children are ‘preprogrammed’ for language learning. They believe that children are naturally endowed with cognitive strategies for analyzing linguistic input and that it is these strategies that contribute to the similarity of acquisition patterns across languages. Linguists and psychologists are also convinced that this competence is not acquired through mimicry or imitation, although exposure to the language is an essential pre-requisite. Research evidence show that children are undeniably creative and intuitive where language is concerned and what they are able to produce linguistically is simply far beyond making mere generalizations on the basis of forms that have been heard.

Barring severe mental or physical impairments, by six years old, children all over the world would have acquired most of what they need to know to speak their language fluently. This is an intellectual feat that all human beings are gifted at; geniuses have no advantage in acquiring a first language! There is little doubt, among linguists and psychologists, that children are born with certain mechanisms and cognitive strategies which facilitate the process of language acquisition, and that certain structures are innate as well.
Parental or Adult Talk

Although we are aware that children acquire language not through imitation, we know that they need exposure to the language to acquire it. This is proven by the case of Genie, a child who was locked up in an attic and neglected by her parents for the first 13 years. When rescued, Genie couldn’t speak and efforts to teach her proved futile. It appears that because her parents seldom spoke to her and she had no contact with anybody, Genie had lost the capacity to acquire language.

This exposure, so crucial to language development, is mainly gotten from communication with the immediate family, i.e. parents and siblings, right from the start. All over the world, mothers often treat noises that their babies make as openings to conversations and will respond as though they are having a serious debate about things. But these encounters are not direct attempts to teach language. We are all aware that children will ignore any attempts on our part to teach or correct the language they produced and will go on quite happily with all their mistakes. What these early interactions seem to do is to socialize young children to certain aspects of language use, such as turn taking and politeness routines. We can conclude then, that to a great extent, children acquire the rules of the language without direct adult instruction.

Young children, however, often know very little about the structure and function of the language adults use to communicate with one another. Consequently, adult speakers normally would have to modify their speech to make sure that their young listeners understand them. Essentially, three things influence adult talk. First, adults must make sure that the child knows he or she is being spoken to. In other words, they must get the child’s attention. They do this by using a name, a special tone of voice or by touching. Second, after getting the attention, adults must choose the right words and sentences so that the child is likely to understand what is said. They do this by discussing what the child is looking at or doing at that moment. Third, adults must choose from a variety of ways to say what they want to say. They can talk slowly or quickly, softly or loudly, use short or long sentences and so on.

Before we go on to the characteristics of adult talk, let’s take a break. You can attempt the question below.
Do you think that adult talk is important for the acquisition of language in children? Why?

Characteristics of Adult Talk

As stated earlier, adults often modify their speech when talking to children, even when they are not explicitly directing children on how to use the language appropriately. Let us now turn to some characteristics of this modified speech.

When addressing babies and very young children, adults' usually use a higher pitch than usual. They exaggerate their intonation and speak slowly and clearly. The sentences they use are short and simple, with few subordinate clauses and modifiers. They also use repetitions and partial repetitions (e.g. "Is Baby smiling at Mama? Baby is smiling at her Mama?"). Personal names such as 'Baby', 'Sayang' and 'Ma' are preferred over pronouns like 'you' and 'I'. There are more content words (nouns, verbs, adjectives) than function words (prepositions, modals, determiners). Adults also frequently invent and use special vocabulary such as 'doggie', 'meow-meow', 'horsie' and others. In relation to this, adult talk is typically concrete and refers to items and actions in the child's immediate vicinity and experience. Adult talk also includes a lot of questions (e.g. "Is Baby wet?") and imperatives (e.g. "Open wiide!"). With children who have started producing utterances, adults have been observed to expand, i.e. to echo, the children's utterances. For example,
Child                      Adult
Mama apple                Mama is eating her apple
Throw Dada                Throw it to Dada
Baby chair                Baby is in her chair

We have stated earlier that adult talk seem necessary not so much for the acquisition of language as for the acquisition of the rules of language use. This has been proven true by studies of cultures with no adult talk, which show children acquiring their native language at about the same rate as children exposed to adult talk.

Before we go on to a closer look at the functions of adult talk, do the activity below.

List down the characteristics of adult talk.

Functions of Adult Talk

The first function of adult talk seems to be to expose children to simple language. Although there are no conclusive research evidence, such simple language may be helpful to the child in figuring out the constituent structures and rules of grammar of the language. A more important function of adult talk is to inculcate in children the rules of
language rules, particularly the rules of conversations. By using a lot of questions when talking to children, adults help socialize them into the question-answer sequences and the alternating turn taking patterns of conversations. These interactions provide a framework within which children can place their utterances and acquire the grammar of the language.

Stages of Child Language Acquisition

Whatever the nature of the input they receive, children the world over go through several stages in the process of acquiring their native language. These stages are babbling, one-word or holophrastic stage, twoword stage and beyond two words. We will take a closer look at each stage below.

The first stage is called babbling and it starts at about five to six months. The child first utters various series of identical syllables such as “ba-ba” or “ma-ma.” As the vocal apparatus matures and the brain lateralizes, this reduplicated babbling develops into a wider range of syllable types such as “bah-bah” and “ah-ah.” These babblings are made by children all over the world and occur in the presence or absence of listeners. When some babbling sounds become familiar for a child and are associated to a consistent referent or used for a consistent purpose, they are called vocables or protowords. For example, a child may use “baba” to indicate that he or she wants to sleep and “dada” when referring to his or her father.

At about one year old, when the child takes his or her first steps, he or she can also be heard uttering words like “mama”, “bye-bye” and “up.” This is called the one-word stage. These early words have a simple structure and refer to familiar elements in the child’s environment: people (e.g. mother and father, siblings), toys and pets (e.g. teddy bear, kitty), food and drink (e.g. cookie and juice) and social interaction (e.g. bye-bye). By this stage, a child is already using noises to get and hold attention socially and to achieve other objectives. Often, children tend to generalize and overgeneralize word meanings, i.e. using the same word to refer to things with similar appearance as when a child learns the word “Meow” for the family cat and extends it to all cats, and other animals. The most important feature of this one-word stage is that children are not rehearsing simple words but are using single words to express whole propositions. Research evidence show that a child may use the word “dada” to mean different things in different contexts. For example,
Word | Meaning
--- | ---
"Dada" | Here comes Daddy!
 | This is for Daddy.
 | This is Daddy's shoe.
 | That is where Daddy sits.

At this stage, a child holding a shoe and uttering "Dada" is not merely naming the object of his/her focus. The child is also using a relatively simple expression to communicate relatively complex content.

Before we go to the next stage, answer the following question.

What are the characteristics of children's utterances at the one-word stage?

From the one-word stage, children move on to the two-word stage with utterances like "Daddy come", "Banana me" and others. This transition occurs at about twenty months of age, when the child has a vocabulary of about fifty words. At this stage, children show a preference for combining a nounlike element with a predicatedlike element, i.e.
naming something and then saying something about it. In other words, the most striking feature of this stage is that children tend to verbalize in propositions and research show that these propositions are similar all over the world. Below are examples of the utterances and propositions produced by children at this stage.

<table>
<thead>
<tr>
<th>Uterances</th>
<th>Propositions</th>
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</thead>
<tbody>
<tr>
<td>&quot;Daddy come&quot;</td>
<td>Daddy, he is coming.</td>
</tr>
<tr>
<td>&quot;Banana me&quot;</td>
<td>The banana, give it to me.</td>
</tr>
<tr>
<td>&quot;More juice&quot;</td>
<td>I want more juice.</td>
</tr>
<tr>
<td>&quot;There mummy&quot;</td>
<td>There is Mummy.</td>
</tr>
</tbody>
</table>

It can be seen that from the start, children seem to be trying to convey propositions or ideas. It is not clear whether this is a characteristic of the language acquisition process or a result of the process of perception. Nonetheless, we can conclude that at the two-word stage, children are not attempting to communicate more content by using two words but are actually expressing more content than at the one-word stage. They are well on their journey to master their language system.

Before we go on, answer the question below.

What is the most important feature of the two-word stage?

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15
Beyond two words, there are no distinct three or four-word stages. At the beyond two-word stage, between two and two and a half years of age and beyond, the child’s utterances become considerably more complex. Children begin to produce utterances containing several words representing single clauses. Below are some examples of these clauses.

1. Abang hurt me. (about a past action by a brother)
2. Me put back. (I’ll put it back)
3. No do that again! (to an adult whispering in his/her ear)
4. That money Ma. (That money is Ma’s)

Let us consider what the child must already know in order to come up with such utterances. Obviously, he or she knows some words. This means that he or she has knowledge of what sounds the words contain and in what order. As the words are used in appropriate contexts, the child must know what they refer to and in what situation to use them. He or she knows the parts of speech and how to combine them morphologically and syntactically. The child has also mastered basic word order and show knowledge of declarative and imperative sentence structures. An impressive cache of linguistic knowledge for one so young! What is more noteworthy, however, is the fact that the child is using language in a systematic way, albeit some incomplete encodings. The utterances seem to be governed by the rules of grammar that stay constant from one utterance to another.

By around three years of age, children begin to utter multiple clauses, at first coordinating two clauses as in “There’s his face and he’s Barney the hippo,” and later subordinating with subordinators like ‘so’, ‘if’, ‘why’ and ‘what’.

Linguistically, what does the child know beyond the two-word stage?

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Summary

Children do not acquire their native language through direct instruction from adults or through imitation of what they hear adults say. While children must be exposed to some linguistic input in order to acquire language, this does not seem the crucial factor for the development of linguistic competence and the ability to produce and understand language. There is now considerable evidence that children are born with the cognitive capacity to acquire language, i.e. certain kinds of structures, and that they go through remarkably similar stages of acquisitions. Even before they utter their first interpretable words, children are already using language socially.

Specifically, in this unit, we have looked at:

- what is termed as language acquisition
- the importance and characteristics of adult talk
- the stages and characteristics of language acquisition

In the next unit, we will take a closer look at the learning strategies that children employ in acquiring a language.
UNIT 2B CHILD LANGUAGE ACQUISITION: LEARNING THEORIES

Objectives
After reading through this unit and doing the exercises, you will be able to:

- Discuss the learning theories related to how children acquire language.
- Define what is termed as language complexity.
- Discuss the processing strategies used by children.
- List out the order of acquisition of language structures by children.

Reading
Aitchison
Chapter 5 (pgs. 91 - 109)
Chapter 7 (pgs. 135 - 164)
Introduction

After the two-word stage, children seem to start acquiring more elaborate structures at a fast pace. Among the first things they do is to start filling in the function words that gives a clearer meaning to their use of the content words. For example, instead of saying "Daddy ball" they will now say "Daddy is throwing the ball". How do children do this? This is a question that has haunted many psycholinguists and many studies have been carried out to find the answers. These studies include looking at

- theories on how children go about learning a language
- what are considered simple and complex structures in language
- processing strategies that children apply to the specific language they are acquiring
- the order of acquisition of the structures

Results of such studies have thrown some light on how children are able to change from a rather slow pace when beginning to learn language (babbling, one-word, two-word stages) to full throttle (beyond two-word stage) within a few months, so much so that by three and a half years, these children can actually tire an adult out with their incessant talk and questions. I am sure all you parents out there are nodding in agreement!

Theories of Language Learning

Children are believed to acquire more complicated structures after the two-word stage through imitation, reinforcement, and hypothesis testing. Research evidence have shown that although all three are present and play a role in the learning of a language, hypothesis testing seems to be the 'modus operandi' utilized by children.

Imitation

Traditionally, most people assumed that children acquire language through imitating what adults say. This means that children will repeat whatever they hear, regardless of whether it is a simple or a complex sentence, and through such repetitions, they will learn new, more difficult structures. Unfortunately, studies have shown that this is not the case. Children never imitate language structures that are more complex than what they can produce. Some, however, do imitate new words.

Ervin-Tripp (1964) found that children at the two-word stage typically produced only two-word utterances when asked to imitate longer utterances. For example,

Adult: I'll make a cup of hot chocolate for you.
Child: Cup chocolate.
Adult: Daddy will play with you.
Child: Daddy play.

From the example, we can see clearly that children imitate or repeat only the most immediate, stressed content words and omit other structures such as articles, prepositions and auxiliary verbs, i.e. structures that are missing from their own utterances. In other words, since these children are at the two-word stage, they only imitate structures that are characteristic of that stage, i.e. content words.

Another interesting characteristic is that their imitations appear systematic; instead of repeating all that they hear, the children seem to pick and choose only those language structures that they already know.

Some may argue that perhaps children do not imitate words, but instead imitate sentences that reflect what they have in mind. Again, studies have shown that this is not so. For example, in a study by Slobin and Welsh (1973), a child aged two and a half years could not imitate a sentence she herself has produced spontaneously.

Child: If you finish your eggs all up, Daddy, you can have your coffee.

When asked to repeat immediately afterwards, the child did so rather successfully.

Father: If you finish your eggs all up, Daddy, you can have your coffee.
Child: After you finish your eggs all up then you can have your coffee, Daddy.

But when asked to repeat the sentence after ten minutes, the child faced more difficulty.

Father: If you finish your eggs all up, Daddy, you can have your coffee.
Child: You can have coffee, Daddy, after.

This study and many others show clearly that children do not imitate sentences. Furthermore, adults simply do not ask children to imitate sentences. It is therefore not likely that children learn language through this process.

Another evidence that refutes the function of imitation in language learning is forms such as mans, teeths, putted and goed that children consistently produced. These forms obviously could not have been imitated from adult speech!
Reinforcement

Under this view, children are said to learn language by being positively encouraged for any utterances that are similar to adult structure and function. On the other hand, they are discouraged and corrected for utterances that are different. Here too studies have shown that such a contention is simply not true. In the first place, adults seem not to care or pay attention to the grammaticality of their children’s utterances. What they stressed on is the comprehensibility of the utterances. Secondly, adults actually seldom correct the grammar of children’s utterances, except maybe for truth value or pronunciation. I am sure those of you with children are fully aware of how exhausting it can be to try and correct their speech. So parents, especially, the world over have learnt to be smart enough to leave their kids well alone when it comes to grammar!

Think of an instance when you have tried to correct a child’s grammar. Were you successful? How many times did you have to try?

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Hypothesis-Testing

This is by far the most accepted view on how children learn language. Under this view, children are said to use what they hear to try to guess at or form a general rule about how different ideas are expressed in the language they are acquiring. A good example is the English plural marker ‘-s’. According to this theory, children acquiring English might guess or form the hypothesis that the idea of “more than one object” is expressed by adding ‘-s’ at the end of the word for the object.

Object (i.e. noun) + “more than one” = Object (i.e. noun) + s

They then apply this rule to produce plural forms such as houses and books, as well as mouses and teeths. Such systematic ‘errors’ show clearly that children, when learning language, make guesses or form hypotheses about its structure and function.

List down some of the structures you have heard children produced that show evidence of hypotheses-testing.

Complexity in Language

Another factor that has a bearing on language learning is the complexity of a language. What is meant by this complexity? In the earlier unit, we have looked at the characteristics of adult talk, where we modify our speech when talking to children. One of reasons why we do this is because we intuitively feel that some structures of the language are more complicated, and therefore difficult, when compared to others. So for
children, who are still developing their perceptive and productive abilities, we "dilute" the forms when communicating with them.

Children too show this movement from simple to complex. Studies on language acquisition across cultures and first languages show that all children follow a similar course of acquisition; they learn the simplest structures and functions first before moving on to more complex ones. This, in part, is due to two sources of complexity that have been identified by researchers: cognitive and formal complexity.

**Cognitive Complexity**

I am sure that from your previous linguistic courses you are cognizant of the fact that the cognitive development of children goes on for quite a time after birth. One of the results of such a development is the child’s ability to acquire and use language. It is only logical then that the child’s cognitive development will have an effect, at least in part, on the acquisition of language structures. As the child grows, he or she will have more knowledge of his or her world, more to think about, and consequently, more to communicate. Reflecting the simple to complex movement that we have discussed earlier, studies have shown that the simpler an idea is, the earlier the child will be able to translate it into language and talk about it. More complex ideas seem to take much longer to communicate.

This is supported by the fact that children often do not use words and word endings which have no meaning to them. In other words, children will not communicate ideas that they do not possess nor understand. This makes sense if we look back at the example of the two and a half-year-old girl who could not imitate successfully after ten minutes. This is also another proof that children do not learn language primarily through imitation.

Another evidence of the effect of cognitive complexity on language acquisition is the similarity in the order of acquisition across languages. Studies show that children, regardless of languages, start talking about the same ideas at about the same time. For example, children have been observed to start talking about the idea of ‘more than one’ or plurality only after they have understood the concept. And all over the world, children more or less adhere to a similar pattern of acquisition. Slight differences may be attributed to the type and degree of exposure to the language and the structure of the language itself. This is termed as formal complexity, which we will turn to next.

**Formal Complexity**

Formal complexity refers to how formally complex a language is. Generally speaking, a language is considered more formally complex if it has many rules with exceptions, i.e. regular and irregular forms. For example, the English past tense, usually
expressed by the suffix -ed, is more complex than the possessive, usually denoted by the suffix -'s, because it has a regular and irregular form. This logically makes learning the past tense more difficult. One language may have a simple way of indicating the past tense and a more elaborate way of indicating plurality while another language may have the reverse. It is reasonable to assume that the more elaborate the linguistic system, the more difficult and longer the child will take to master it.

Another characteristic of formal complexity is the degree of 'agreement' between the linguistic system and the children’s operating principles, i.e. how they go about analyzing the language. For example, children seem to have a natural tendency to recognize suffixes before prefixes and prepositions, regardless of the language. Because of this ability, they find it easier to learn suffixes, and it follows that prefixes and prepositions can be regarded as more complex than suffixes. We will look next at what exactly are these operating principles.

Before we do so, take a break and try the following.

What is complexity in language?

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
Operating Principles (or how children go about analyzing language)

Numerous studies that were done show that children acquire some language structures before others due to the way they analyze the language or their operating principles. These principles differ according to the cognitive maturity of the child and interact with whatever structures of the language that he or she has mastered at that point. Researchers have broadly categorized these into two groups: those concerned with semantic coherence and those concerned with the surface forms of language, as given in the diagram below.

**Semantic Coherence**

A. Look for systematic modifications in the forms of words.

B. Look for grammatical markers that indicate underlying semantic distinctions clearly and make semantic sense.

C. Avoid exceptions.

**Surface Form**

D. Pay attention to the ends of words.

E. Pay attention to the order of words, prefixes and suffixes.

F. Avoid interruption or rearrangement of linguistic units.

*Source: Clark & Clark (1977)*
Semantic Coherence

In simple terms, this means that children, just like us adults, hold on to the belief that language should make sense, i.e. speakers will only talk about ideas or situations that the listeners will be able to make sense of.

Principle A tells the child that the forms of words may vary by the addition of prefixes and suffixes, and to use context to ascertain which form is correct. By observing that adults use both shoe and shoes to refer to the same object, the child can safely conclude that the sequences of sounds are somehow similar and stops him or her from relating other sequences like free and freeze, as adults do not use this pair of words in the same situations.

Principles B and C show the child’s tendency to look for a simple one-to-one mapping between ideas and linguistic units. Children look for regular patterns.

Surface Form

These three operating principles has to do with how to divide up the speech stream while keeping track of the various linguistic units.

Principle D helps children identify, especially, suffixes that change the meaning of words. A good example is the plural morpheme -s on nouns in English. By paying attention to the surface form and relating it to the idea of ‘more than one’ through context, children are able to work out the use of the linguistic unit.

Operating principle E helps children keep track of word order, where in languages like English, this is crucial in identifying grammatical structures such as subject and predicate. It also helps children to monitor grammatical morphemes such as prefixes and suffixes.

The last operating principle in this category helps children monitor the different propositions found in a sentence, which is often denoted through subordination and coordination. This principle stops children from producing relative clauses, for example. It plays a crucial role when children start combining several propositions into one sentence.

The Acquisition of Language Structures

What has been discussed above provide a basis for children to move from the two-word stage to more complicated structures. I will not go into the different types of structures that children acquire as this is already discussed in quite sufficiently in the text. So please refer to the text for the order of acquisition. Keep in mind that the sequence of
acquisition, barring minor discrepancies, are similar throughout the languages of the world.

Summary

In this unit, we have looked at the areas below. You are to fill in part b.

a. Beyond the two-word stage

- Learning Theories
- Operating Principles
- Language Complexity
  - 1. Cognitive Complexity
  - 2. Formal Complexity
    - 1. Imitation
    - 2. Reinforcement
    - 3. Hypothesis-testing
    - 1. Principles for Semantic Coherence
    - 2. Principles for Surface Form

b. The Sequence of Acquisition of Language Structure

- ?
- ?
- ?
UNIT 3  
ANIMAL LANGUAGE: THE ARTICULATE PRIMATE

Objectives
After reading through this unit and doing the exercises, you will be able to:

- Discuss the forms of animal communication.
- Relate some studies on teaching language to chimpanzees.
- Discuss the implications of such studies to the field of psycholinguistics.

Reading
Aitchison  Chapter 2 (pgs. 23 - 46)
Introduction

When we observe animals in groups, it doesn’t take a genius to deduce that they too interact. Dogs display cruel fangs when they are displeased while bees do a mad dance routine when a nectar source is discovered. It is only natural to ask if these forms of communication are similar to our language.

Through the years, layman and researchers alike, have embraced passionately the conviction that animals do communicate and some has gone so far as to say that perhaps the sonar communication of dolphins and whales are actually much more sophisticated than the human language. Those of you who are “Trekkies” will no doubt remember the Star Trek movie (I can’t remember which one) where Captain James T. Kirk and his courageous crew had to travel back in time to rescue the last two remaining hump-back whales on Earth and bring them back to the future to save the world from being destroyed by aliens, who for some inexplicable reason, seem only to understand the whales’ clicks and snorts. What I gathered from this is how ignorant I was to the universality of the whale’s form of communication. I thought they were only beautiful to look at and good for blubber, you see! And I am sure many were captivated by Darwin (apart from Lucas, of course!) of Seaquest.

There is no doubt that most, and presumably all, species of animals have developed systems of communication with which they can signal danger, hunger, fear and other basic instincts (Sharon Stone not included!). These systems, however, have proved to be rather limited.

Animal Communication in Their Natural Habitats

Studies of animal communication systems, whether bees, dogs, whales or dolphins, have shown that these systems simply lack the creative characteristics of a human child’s speech. Beyond a limited set of repertoire of meanings, animals just simply do not possess the mental capacity to be communicatively creative.

In addition, much of the communication that occurs between animals are dependent on signs, for example the barring of fangs to show aggression, rather than on symbols, such as the alphabet. These signs or acts are not arbitrary symbols. They are signs that accompany quite specific desires or instincts. Even animal vocalizations are not a logical sequence of thought but are actually a sequence of sounds accompanying various emotional states.

The case of the higher primates, especially chimpanzees, is quite special. Of all the species in the animal kingdom, they come closest to human beings on the evolutionary ladder. Darwin even went so far as to claim that we are actually descendents of the big apes. Although I disagree wholeheartedly to this notion, it can’t be denied that there are striking similarities between the two species. Many attempts and studies have been carried out to ascertain the extent of the communicative abilities of our ‘cousins’.
Though the results so far are inconclusive, continued research in the area will continue to throw light on the matter. And if we are really descended from the apes, it is only reasonable that we study them now as a million years from now, they would have evolved into you and me!

Observe your pet, whatever it may be, and list out the signs made by it that show some form of communication.


producing fluent speakers. Language acquisition can only occur successfully in a rich, natural, socially and emotionally interactive environment. As we know that chimpanzees are human-like in intelligence, it is only logical that they be taught the language as a human child would.

Summary

Human language is primarily a system of arbitrary symbols rather than a system of non-arbitrary signs. This fact distinguishes human language from the communicative systems that animals use in their natural habitats. Animal communication is closer to a system of signs. While humans are the only species that has evolved an innate ability to use language, it is still unclear to what extent animals (especially chimpanzees) are able to learn human language in experimental settings. While some researchers are convinced that chimps can communicate fairly well, others have concluded that language is the exclusive invention and property of human beings.
PART II

LANGUAGE AND COGNITION

In Part I, we have looked at pertinent areas in first language acquisition, the most important being child language acquisition. Based on the module and text, we know that language is complex and that human beings are predisposed to it. We seem to carry within our brains a genetic blueprint for acquiring and using language, and this ability is activated when we are exposed to linguistic input.

The focus of psycholinguistic inquiry is how this sophisticated communication tool is acquired, produced and comprehended by humans. Looking at child language acquisition has thrown some light on the matter, but it has also raised many intriguing questions. One of these is the ultimate ease with which children acquire the skills to utilize language, i.e. listening, speaking, reading and writing. We now know that these are actually complicated skills that require a mental capacity that is both well developed and sophisticated. How do children do this in a period of approximately five years? Another equally perplexing observation is the creativity in language that seems to set a boundary between human communication and that of other animals. Unlike the chimpanzees that were taught to communicate, you and I seem to be able to come up with sentences that we have never spoken or heard before. And we can come up with very simple as well as very complex sentences (which we sometimes find difficult to understand!). How do we do this? What is there in our mental capacity that allows us, and not other animals, to perform these "miracles"?

In searching for these and many other answers, we begin Part II of our journey through the world of psycholinguistics. After looking at how language is acquired, we now turn to the language itself, its structure and how it is produced and comprehended. We will also take a quick tour of the brain and its functions, to try to better understand why we remember certain things and not others. Lastly, we will sneak a peek at the whole argument about whether it is language that creates reality or whether it is reality that makes language what it is.
UNIT 4  GRAMMAR,  COMPETENCE  AND
PERFORMANCE

Objectives

After reading through this unit and doing the exercises, you will be able to:

- Define what is termed as language
- Define what is termed as grammatical competence.
- Define what is termed as communicative competence

Reading

Aitchison  Chapter 8 ( pgs. 165 - 182 )

Introduction
Introduction

For two thousand years, language has been the focus of people's curiosity and intellectual probing. In the nineteenth and twentieth centuries, the field of linguistics emerged to address such questions as 'What is language and what are its structures? How do its structures function and how are they acquired?' and many others.

Expression, Content and Context

One basic observation about language is that it seems to fulfill a dual function; the fundamental use of language is to link expression to content, i.e. to provide words and sentences for the expression of thought and feeling. A closer examination, however, will show that language has a third function, critically important to communicating and interpreting meaning.

Consider the question, "Is there a sales tax for all things sold in Malaysia?" Among the possible replies to this are "Yes," "No," and "I don't know." It is just a straightforward question by someone requesting for a piece of information. Now consider another straightforward question by a guest at your dinner party: "Is there any soy sauce in the bottle?" In this case, if you, as the host, were to earnestly reply "Yes," "No," or "I don't know," and let it go at that, many eyebrows would be raised, at the very least! If we look back at the form of the questions, they are identical. But how their expected responses differ! In the context of the dinner party, your guest would have every reason to expect that you recognize his or her inquiry about soy sauce not as requesting for information about it but the soy sauce itself. And if you, as the host, were to ignore the context of the question and take it literally as a request for information, then you, most probably, would be regarded as decidedly obtuse or absolutely rude. Now, how many times have we engage in such literal interpretations in our daily conversations? I am sure that some of you may already be experts at it!

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Try to think of instances when you have purposely interpreted a question or comment literally. What reaction(s) did you get?

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Besides content and expression, then, there is a third aspect to a language; this is context, i.e. the intended use of both expression and content. Speakers expect listeners to interpret their words and sentences within a context. All utterances are embedded in a context and their interpretation relies on familiarity with the context. The code that links content and expression is grammar. The system that links grammar and interpretation is grammar in use or language. Without examining grammar and context, language and its functions cannot be adequately understood.
Grammatical and Communicative Competence

A central fact about language is that the connection between the things signified and the words used to signify them is arbitrary. Not only can one and the same thing be signified or symbolized differently in different languages, but even in a single language, several symbols can represent the same entity or notion. Because of this arbitrariness, languages must be highly organized systems if they are to function as reliable vehicles of expression and communication. If there were no pattern to the way we voiced our thoughts and feelings, listeners will face an insurmountable task in determining exactly what we meant. It is therefore not surprising that languages have evolved into extraordinarily complex systems of observable patterns.

When we observe how people use language, we will see that the patterns utilized obey certain ‘inherent’ rules, i.e. observed regularities of language behavior and of the underlying systems that we can infer from such language behavior. A language, then, is a finite set of elements and a system of rules for combining these elements to form patterned sentences that can be used to do specific jobs in specific contexts. This finite set is normally mastered by a child within a few short years and is termed grammatical competence.

But the ability to speak is much more than just grammatical competence, i.e. knowing the elements of a language and the rules for putting them together into well-formed or grammatical sentences. Being fluent in a language means knowing how to form sentences as well as knowing what those sentences are capable of doing and of when and how to use them appropriately (plus how to interpret them in context). This ability is termed communicative competence.

Summary

Language is an arbitrary rule-governed system, known as grammar, that links content, expression and context. Utilization of language requires both knowledge of vocabulary, pronunciation, sentence structure and meaning (grammatical competence) and the implicit knowledge of how to appropriately use this grammatical competence. There is, however, one thing to keep in mind. The rules governing the appropriate use of language differ from one speech community to another. So, even a shared grammatical competence may not be adequate to make you a fluent speaker in another speech community, at least in some situations.

Going back to the psychology of language, we can see that grammatical and communicative competence are at the center of psycholinguistic inquiry. How this arbitrary rule-governed system is acquired, produced and comprehended must begin with an examination of both grammatical and communicative competence. To do so, we will start by looking at the structure and function of language, the topic of our next unit.
UNIT 5  THE STRUCTURE OF LANGUAGE

Objectives
After reading through this unit and doing the exercises, you will be able to:

* Discuss the structure of language
* Discuss the function of language
* Define terms related to the structure and function of language

Reading

Aitchison  Chapter 8  (pgs. 165 - 182)
Steinberg  Chapter 5  (pgs. 95 - 113)
Introduction

Language is a vehicle for communication; people talk to convey ideas, among other things, and listen to understand ideas. A closer look at language will reveal that it not only has a structure but also a function to which the structure is applied.

In examining how language is comprehended and produced, its structure and function must be studied as these give hints about the mental processes involved in production and comprehension.

One of the many perplexing observations made from research in child language acquisition is how children are able to master the skill of listening and speaking so rapidly and effortlessly. Studies have already shown that listening and speaking are actually complex skills, requiring considerable cognitive sophistication. Another seemingly ‘incredible’ phenomenon is that when these children speak, they are able to produce novel sentences, i.e. sentences they have never said or heard before. At the same time, however, these sentences still fit within the conventions of the language being used. We know that such complexity and creativity are achieved by the brain; they are the result of cognitive processes. What are these processes? How do they operate?

Studying the structure of the language may yield some clues about this unique human ability. Studying the skills of listening and speaking could also give some answers, which will throw some light on the complexity and creativity of human thought itself. In other words, by examining the structure of language and how it is produced and understood, we can better understand how our brains work. And this is one of the objectives of psycholinguistics.

The Sentence and Its Structure

Speech has the appearance of being a succession of ideas expressed in words, phrases and clauses, forming what we termed as sentences. How is this done? An analysis of language shows that sentences can be divided into parts that reveal the elementary ideas being expressed and their conceptual relations to each other.

Most complex sentences are built out of smaller sentences or clauses. For example, the sentence

Adam’s friend, who lives in Subang Jaya, likes village life because he likes quiet and because he hates traffic jams.

is made up of the following clauses:
b. Adam's friend likes village life.
c. He likes quiet.
d. He hates traffic jams.

What is not often noticed is that most simple sentences, despite their unified appearance, are built out of smaller sentences too. For example, the simple sentence

A. The beautiful young princess used her father's car.

is made up of the following sentences:

a. The princess was beautiful.
b. The princess was young.
c. The car belonged to her father.
d. The princess used the car.

We can see that sentences a, b, c and d above each expresses a single idea while sentence A expresses the combined four ideas in a, b, c and d. These ideas are units of meaning called propositions and, based on our earlier analysis, we can loosely conclude that they form the basis of all sentences.

Going back to the complex sentence then, we can say that every sentence has two levels of structure: a surface structure and an underlying representation. The surface structure is what is spoken or written, i.e. the linear arrangement of clauses, phrases, words and sounds. The underlying representation consists of propositions, put together in a particular way. Again, we can loosely conclude that the surface structure says how the sentence is to be spoken while the underlying representation says how it is to be understood.

I am sure that you have been exposed to tree diagrammes and phrase structure rules. The sentence The beautiful young princess used her father's car can be shown in a tree diagramme below,

![Tree Diagram](image-url)
The four simple sentences above can be combined in different ways to give different surface structures and underlying representations. For example,

e. The young princess who used her father’s car was beautiful.
f. The beautiful princess who used her father’s car was young.
g. The car that the beautiful young princess used belonged to her father.
h. The princess who was beautiful and young used the car that belonged to her father.

The sentences above have different underlying representations, i.e. different meanings, because the underlying representations of a sentence consists of propositions in a particular arrangement. However, as the sentences are all built from the same propositions, they are paraphrases of each other.

The notions of proposition, surface structure, underlying representation and paraphrase play an important role in listening and speaking. We can say that speaking is a process of turning propositions into words and clauses and eventually into sounds while listening is the opposite.

Before we go on, try the activity below.

*****************************************

Break up the sentences below into smaller sentences containing one proposition each.

1. A grey-haired lady, with a shawl around her shoulders, was sitting in her garden watching the setting sun.
2. An elderly, wrinkled face man in an old raincoat slowly walked along the dusty, tree-lined road.
3. The actress, Ann Cross, who won an Oscar for a film made last year, was seen having dinner with a man whose company recently went bankrupt.

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Combining Propositions

Now that we know something about propositions, surface structure and underlying representation, let us look at the way we use sentences. We obviously do not speak in sentences that expressed only one proposition each. If we do so, every sentence will be short and unrelated to its neighbours, and it will take forever to say anything. A closer look at speech will show us that our propositions are combined in different ways to form complex surface
structures.

Propositions combine in three different ways, i.e. coordination, relativization and complementation. Their functions are fundamentally different. Generally speaking, coordination links ideas, relativization qualifies ideas and complementation fills in ideas. These three functions seem to exhaust the basic ways people have for thinking of one idea in relation to another.

Coordination links two propositions by and, but, or or some other coordinate conjunction. For example,

*Rahim likes fruit but Rahim gave his orange to Rosnah.*

The two propositions are placed on par with each other.

In relativization, one proposition is attached to a part of another proposition in order to restrict or qualify that part. A good example is the relative clause.

*The beautiful young princess used the car that belonged to her father.*

Most modifiers are types of relativization; these include most adjectives, adverbs and prepositional phrases.

In complementation, one proposition is used to fill in an empty part of another. For example,

*Something was nice.*

A proposition, called a complement, can be inserted to replace the 'something', producing the sentence below.

*[Wellington won the battle] was nice.*

English uses three main devices to explicitly mark *[Wellington won the battle]* as a complement. They are as stated below,

a. *That Wellington won the battle was nice.*
b. *For Wellington to win the battle was nice.*
c. *Wellington's winning the battle was nice.*

Complementation can of course take other forms.

What makes these combinatorial processes so powerful is that they can apply again and again to form very complex sentences. It is recursive and, in theory, could go on indefinitely. A good example of this is when children come up with a sentence such as,
This is the cow with the crumpled horn that tossed the dog that worried the cat that killed the rat that ate the malt that lay in the house that Jack built.

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Using the three combinatory processes discussed above, try making the longest grammatical sentence that you can. How many times did you use each process?

*******************************************************************************

Condensing Propositions

Apart from combining propositions, surface structures can often be condensed into very compact forms. The two most important process are ellipsis, i.e. the omission of words, and pronominalization, i.e. the use of pronouns. Ellipsis is used to leave out repetitious and unnecessary words while pronominalization functions to replace complicated expressions with simple ones. Both processes make sentences more compact without altering their meaning.

In ellipsis, certain words can be omitted from the surface structure what they repeat content given elsewhere in the sentence - usually earlier. There are two kinds of ellipsis - sentential ellipsis and contextual ellipsis.

In sentential ellipsis, certain words are left out because they are predictable from the rest of the sentence. For example, the underlined words in sentence a below can be omitted, producing b.

a. Napoleon conquered Italy, Napoleon conquered Prussia, and Napoleon conquered Austria.

b. Napoleon conquered Italy, Prussia and Austria.

In contextual ellipsis, you can only tell what has been left out or unsaid only through context. For example,

King George : Where did you defeat Napoleon?
Wellington : At Waterloo.

Contextual ellipsis are especially common in informal speech.

Pronominalization achieves condensation by using simple expressions, such as pronouns, to replace complicated ones, such as full noun phrases. For example,
a. After the talented young runner won the gold medal at the Commonwealth Games, the talented young runner became the talk of the town.
b. After the talented young runner won the gold medal at the Commonwealth Games, he became the talk of the town.

The processes of ellipsis and pronominalization offer a distinct challenge to psycholinguists. Among the questions are:

- In comprehension, how do listeners ‘fill in’ the information missing from elliptical sentences? How do they ‘find’ the objects to which pronouns refer?
- In production, how do speakers decide when to use ellipsis and pronominalization? How do they know that their listeners will be able to find the missing or replaced words?
- In acquisition, how do children acquire these two skills?

**Ambiguous Sentences**

The different ways of combining propositions and condensing surface structure have resulted in many sentences being ambiguous, i.e. some surface structures correspond to two or more underlying representations. For example,

*Visiting relatives can be fun.*

This sentence has two interpretations. One is that relatives who visit can be fun, and the other is that going to visit relatives can be fun. Ambiguity like this is common.

*****************************************************************************

Workout the underlying representations for the sentences below.

a. John is eager to please.
   b. John is easy to please.

Are they the same? What is different?

*****************************************************************************

So we can see clearly that just because two sentences have similar surface structures, they do not necessarily have similar underlying representations. However, such examples again confront psycholinguists with perplexing questions and considerations:

- How do listeners and speakers cope?
- Listeners must be able to comprehend the different underlying
representations and decide which one was meant. Speakers must be able to produce such sentences with the confidence that their listeners will be able to decide correctly. Speakers and listeners must be able to handle sentences with virtually identical surface structure.

The Function of Language

The structure of each sentence specifies the uses to which it can be put. The structure of a declarative sentence can be used to tell someone about something, not to ask.

The fundamental function of language is communication, which has three main elements:

(i) a speaker
(ii) a listener
(iii) a signaling system (in our case, the English language)

The signaling system must be one that both the speaker and listener are able to use. In an act of communication, a speaker will decide to impart some information in a particular way. The speaker then select a signal - a particular English sentence - that he or she believes is appropriate and utter it. The listener receives the signal - the uttered sentence - and takes it in for immediate use or for storage in memory. With that, one stage of communication is complete.

If we look at this communication act, most of what is going on are mental activities unobservable to the naked eyes. This includes the function of language, in particular with the speaker's intention, the ideas he or she wants to convey and the listener's current knowledge. Specifically,

(i) speakers intend to have some effect on their listeners, and must get them to recognize these intentions.
(ii) speakers want to convey certain ideas, and to do this, the sentences must also reflect the listeners' ways of thinking about objects, states, events and facts.
(iii) speakers must have some conception of what is on their listeners' minds at the moment and of where they want the communication to lead.

These are three aspects of language function, namely speech acts, propositional content and thematic structure.

Speech Acts

Each sentence, taken as a whole, is designed to serve a specific function, which is critical to communication. This because speakers expect listeners to
recognize the functions of the sentences they speak and to act accordingly. For example, when they ask a question, they expect their listeners to realize that it is a request for information. If the listeners fail to do so, they are judged as having 'misunderstood' even though they may have taken in everything else about the utterance.

According to Austin (1962) and Searle(1969), every time speakers utter a sentence, they are performing a speech act. And this is accomplished through the utterances used. Among the most common are performative utterances, declaratives, interrogatives and imperatives.

In performative utterances, the speaker performs a speech act in the very utterance of the words. For example,

I bet you RM 100 the Brazilians will win.
I promise to pay you RM 500 on September 1st.

Sentences like the above have structural properties in common. Each of these contains a 'performative' verb that indicates the speech act the speaker meant the utterance to perform.

Telling is normally done with declaratives or assertions, questioning with interrogatives and ordering with imperatives. For example,

a. I tell you that it's raining out.
b. I ask you to tell me who invented the telephone.
c. I order you to stand still.

But in English, as in most other languages, these speech acts do not normally require such full constructions. What we normally hear is

d. It's raining out.
e. Who invented the telephone?
f. Stand still.

These shortened forms are used because it would be a waste of time and effort to repeat the performative sentences each time. Instead, English uses an efficient arrangement for 'marking' or specifying speech acts, i.e. all utterances are assumed to be an assertion, except when 'marked' otherwise e.g. by the use of the interrogative or imperative forms or by performative verbs. This is an extremely efficient system for, generally, the commoner the speech act, the simpler it should be to produce and comprehended.

However, not all functions are achieved directly by the specified speech act. For example, to command someone to do something can also be done indirectly through other constructions such as declaratives, interrogatives and others.

Direct command : Open the door.
Indirect commands : Can you open the door?
Would you mind opening the door?
The should be open.
I would prefer the door open.
It’s hot in here.

These constructions differ in politeness, directness, command weight and so forth. There is a distinction then between direct and indirect speech acts; direct speech acts are those expressed by the constructions specifically designed for those acts, while indirect speech acts are those expressed by other constructions.

Propositional Content

Sentences can be used to inform, ask, warn or request listeners about something. Each of these 'somethings' must have content to convey the ideas the listeners are to be informed, asked, warned or requested about. Therefore, an important function of sentences is to specify the ideas around which a speech act is built. This is done through the propositional content of a sentence, i.e. the combination of propositions a sentence expresses.

Propositions have three basic functions: they denote states or events; they denote facts about states or events; or they qualify parts of other propositions. For example, the proposition expressed by The princess drove the car can be used to denote an event, e.g.

The princess’s driving of the car took a long time,
to denote the fact of an event, e.g.

That the princess drove the car surprised the king,

or to qualify part of another proposition, e.g.

The princess that drove the car was delighted.

Thematic Structure

Apart from knowing what to convey, speakers also have to pay close attention to their listeners, i.e. keep track of what their listeners know and don't know, refer to things they do know and inform them of things they don't. Speakers must also direct their listeners and steer the conversation in the right direction. In short, speakers must have some knowledge about the listeners' current mental states. This is reflected in what is termed as thematic structure (Halliday, 1973).

In English, thematic structure has two main functions, i.e. to convey given information and new information and to convey subject and
predicate.

Sentences signal given and new information through stress or accent on particular words. The word that spoken with the greatest emphasis and highest pitch always conveys the new information. The rest of the sentence conveys the given information. For example, the new information (which receives focal stress) in the sentences below is underlined:

a. Your brother stole the money.
b. Your brother is the one who stole the money.
c. It was your brother who stole the money.
d. The money was stolen by your brother.

However, in most ordinary sentences, the new information or focal stress falls on the final content word.

When you talk, you also tailor your sentences to suit yourself. You have something you want to talk about and something you want to say about it. These functions are conveyed by the subject and predicate. For example,

a. The police arrested the murderer.
b. The murderer was arrested by the police.

In a, the focus of the sentence is on the police and what they did. On the other hand, in b, the focus is on murderer and what happened to him or her. We can safely assume that listeners will remember or store a one way and b another way. Subject and predicate are therefore important in a conversation as they allow participants to keep track of what each other is talking about.

In most sentences, the subject is given information while the predicate is new information. This makes perfect sense as normally we know what speakers are talking about (i.e. the subject) but not what they are saying about it (i.e. the predicate). However, there are always exceptions.

Discourse

Throughout this unit we have been looking at the sentence and its parts. But in our daily conversations, we hardly ever stop using language after just one sentence! Everyday, we engage in small talk, stories, jokes, gossip and other types of communication that consist of a succession of sentences put together according to the structure of each type and involving numerous speech acts and thematic structure. Indeed, these make no sense except within the larger framework of discourse, that determines which speech acts are appropriate and what should be the given information and subject. So discourse is another important element of language use that should not be neglected.
Summary

Language has long intrigued scholars, not only because it is a complex and powerful tool for human communication, but also because it seems to reflect the very nature of human thought. Philosophers and linguists have studied how language is acquired, produced and comprehended to help us better understand what goes on in our minds.

Structurally, the basic unit of language is the sentence. Generally, it has two levels, i.e. a surface structure and an underlying representation. The surface structure is what we speak, consisting of sounds, words, phrases and clauses arranged so that they form a linear succession of units. The underlying representation are the ideas we want to convey, consisting of propositions combined with one another by coordination, relativization or complementation. In effect, the surface structure says how the sentence is to be pronounced while the underlying representation indicates what ideas it was meant to convey.

Functionally, the sentence has three relatively separate aspects, i.e. speech acts, propositional content and thematic structure. We utter sentences in order to perform speech acts, such as to ask questions, make bets, assert facts and the like. This speech act that a sentence is meant to express is reflected directly or indirectly in its structure. When performing speech acts, we also convey propositional content; our sentences express propositions that denote objects, states or events, and facts in particular ways. Lastly, we always take our listeners into consideration. In each sentence we indicate given and new information (what we judge our listeners know and do not know) and subject and predicate (what we are talking about and what we are saying about it). In conclusion, different aspects of a sentence fulfill different functions.

In this unit, we have looked rather closely at the sentence as the basic unit of language. We have done so because we produce sentences when we speak and it is sentences that we listen to and comprehend. And we acquire language through acquiring its sentences, among other things. Production, comprehension and acquisition of language are the focus of psycholinguistic enquiry as these processes are cognitive in nature. Knowing them would mean understanding how the human mind works. Consequently, since all three processes uses sentences, it is only logical that a closer look at them is necessary.
UNIT 6  PERCEPTION AND COMPREHENSION

Objectives
After reading through this unit and doing the exercises, you will be able to:

- Define terms related to sentence processing or comprehension.
- Discuss the role of ambiguity in comprehension.
- Discuss models of sentence processing

Reading
Aitchison Chapter 10 ( pgs. 199 - 236 )
Introduction

In the last unit, we have looked at the structure of language, focussing on the sentence. In this unit, we will look at the comprehension of the sentence, i.e. how listeners break down the surface structure to get at the propositions. But you must bear in mind that the process of comprehension is actually based on several levels that work in tandem to produce understanding. So the comprehension of the sentence is based to some extent on comprehension of speech or auditory signals and words. In other words, when you listen to linguistic input, you are actually engaged in processing, simultaneously, the auditory stimuli, the words or lexical elements you hear and the sentences that the words form. However, as stated earlier, in this unit we will focus on the comprehension of sentences as you have already covered speech perception and lexical access in your other classes.

In communication, one of the most striking features of natural speech is the rapid rate at which it arrives. Studies have shown that speech rates in everyday conversation typically average between 140 to 180 words per minute. A television newsreader speaking from a prepared script can easily exceed 210 words per minute. The result of such rapidity is that listeners often find connected speech a perceptual and conceptual blur. But this is not the only problem. Studies have also shown that in fluent speech, words run together and often are not as clearly articulated as they might seem. Scientific analysis of ordinary speech show that there is a lack of regular breaks between the words, phrases and other linguistic elements of spoken sentences. It seems then that isolating the individual words in connected speech must be done by the listener, often based on the meaning of the sentence as a whole. Studies have shown that listeners make use of the surrounding semantic and syntactic context to understand sentences.

So, in spite of the speed and ambiguity of the auditory stimuli, listeners, with apparent ease, are generally able to segment the speech stream into words, decode the grammatical structure of sentences, determine the semantic relations between the words and resolve semantic ambiguities, and draw logical inferences and implications beyond the literal meanings of the sentences themselves. How you and I, as listeners, accomplish this seemingly formidable task is called sentence processing.

Structural Properties of Sentences

One reason why we can process this rapid speech is our ability to systematically make use of structure in language. Structure here is defined as the sets of rules that tell us how words are connected to form sentences and convey a meaning, as we have seen in the previous unit and as you have read in chapters 5 and 6. What Chomsky has tried to do is come up with a conclusive description of this structure so that we can finally explain how we can come up with and decipher the sentences we use in communicating with
each other. Apart form Chomsky, there are other experts that have tried to do the same thing over the years. The debate is still going on.

An important point to remember here is that the rules are not consciously followed by fluent speakers and listeners. The processes of producing and comprehending seem to require little conscious effort and equally little time. This ties in very well with the idea of competence. As a native speaker/listener, you have the knowledge of the structure of your native language in your brain and you will 'automatically' apply this knowledge when you speak or listen. Yet, for communication to occur, the speaker and listener must share a common knowledge base, and each must have access to the same knowledge sets and rules.

To illustrate this, let us consider the three sentences below. These sentences follow the noun-verb-noun pattern.

a. The student read the book.
b. The teacher graded the test.
c. The teacher heard the student.

Although the sentences have the same word order, only the third sentence in reversible. Based on real-world knowledge, we know that some actions are possible and some are not. Thus, some constraints are put on what form the language can take. These properties of language produce regularities that allow for a degree of statistical prediction whenever we listen to natural speech. In simple terms, using our knowledge of the structure of our native language, we can predict quite accurately what will be coming next when we listen.

It is a fact that the average college-educated adult ( native English speaker / listener ) may have speaking vocabulary of 75,000 to 100,000 words (Oldfield, 1963). Now suppose this native speaker/listener was about to say a word to you and you had to guess what the word might be. If all words in the language were equally probable, the odds of it being any particular word would be between .00001 and .000013. But you and I know that each word is not equally probable; some words tend to be used more frequently than others. Studies have shown that in writing, the most frequently used word is 'the' and in spoken telephone conversations, 'I'. In fact, the 50 most commonly used words in English make up about 60% of all the words spoken and about 45% of those written. Therefore, we can conclude that we speak only about 10 to 15 words before repeating a word (Miller, 1951).

What is so important about this fact? Well, this proves that some words are more predictable than others, even out of context. When words are heard within a context, the effect is predictably increased. If someone started to speak to you but stopped mid-sentence, you would stand a good chance of correctly guessing the next word. For example, if someone said “The train pulled into the ...,” you would probably guessed “station” or “tunnel.” At the very least, you would expect a noun or an adjective, and you would very probably be right!
Various studies conducted by psycholinguists and cognitivists have shown that making a word more likely to occur, either through structure or semantic and syntactic context, will make words easier to remember, more audible under poor listening conditions and more recognizable when presented visually for brief periods.

Another evidence for the use of predictable structure of the auditory signal is the pauses found in spontaneous speech. The speech we hear has an intonation pattern and rhythm that provide us with hints of what is to come. One of these is the pauses, that are filled either with "uhms" or silence. Studies on connected speech verify that the pauses tend to occur just before words of low probability in the context. In other words, these studies suggest that in fluent speech, we do not pause to take breath. We take the opportunity to breathe during natural pauses determined by the linguistic content of what we are saying.

One conclusion we can draw from the above discussion is that sentence processing is a surprisingly active process, albeit the fact that it seems to be done rapidly and unconsciously. To understand how sentence processing takes place, we must understand how syntactic and semantic processing are accomplished. This is where we will turn to next.

Syntactic Processing

Two important 'contributions' of transformational grammar, as developed by Chomsky and his associates, are the distinction between surface structure and deep structure and the distinction between competence and performance.

The distinction between surface structure and deep structure provides and important insight on sentence processing. It tells us that a listener takes two steps to understand what he or she hears, i.e. he or she first analyzes the surface structure and then uses the information to detect the deep structure, which conveys the meaning.

The distinction between competence and performance shows that the way people produce language is not equivalent to their knowledge of the language. We know that in normal everyday conversations, we seldom speak in complete sentences. In fact, much of what we say consists of incomplete fragments. But this does not mean that we can’t produce a complete sentence or that we can’t differentiate between what is grammatical and what is not. So, in order to explain how we understand sentences, we need to take into account both competence and performance.

Syntactic Structure of Sentences

In order to understand a sentence, the listener or reader must put the words into their relevant linguistic categories; this is known as parsing a sentence. For example, the sentence "The boy ate the cake" can be parsed in this way:
But there are sentences that are structurally ambiguous, i.e. parsing it a different way will produce a different meaning. For example, consider the sentence "They are stewing apples." This sentence could mean that stewing is part of the verb or it is an adjective modifying apples. Using a phrase-structure tree, we can parse the sentence in two ways:

Now, most sentences that we hear and produce every day are more complex than the examples above. The sentence "The boy ate the cake" could be transformed into a passive version (The cake was eaten by the boy), a passive negative (The cake was not eaten by the boy) and many others, all of which can be derived from the basic declarative sentence. So, a part of sentence processing must include the ability to detect common underlying meanings of sentences despite the differences in the surface structures.

An additional complicating factor is that many sentences that we have to process have multiple clauses. This increases the processing load. One of the ways that listeners
handle such complexity is by breaking the sentences up into smaller, more manageable units, i.e. clauses. For example, consider the sentence below:

\[
I \text{ was going to take the commuter to Kuala Lumpur, but I decided it would be too heavy.}
\]

This is a joke! But in order for you to get the punch line, you would have to break up the sentence into three clauses. Studies done also show that we automatically parse complex sentences according to clauses, creating ‘chunks’.

**Sentence Parsing and Syntactic Ambiguity**

One of the rich sources of input on the processing of syntactic structure is how listeners and readers handle syntactic ambiguities. There are two types of syntactic ambiguity that have intrigued psycholinguists: local ambiguity and standing ambiguity.

**Local ambiguity** refers to cases where the syntactic function of a word or how to parse a sentence remains temporarily ambiguous until more of the sentence is heard. For example, when we hear the sentence:

\[
\text{When Sharil passes the ball, it always gets to its target,}
\]

we will be uncertain about the structure of the sentence after the noun phrase the ball because there is at least two ways of completing the sentence:

\[
\begin{align*}
(a) & \quad \text{When Sharil passes the ball, it always gets to its target} \\
(b) & \quad \text{When Sharil passes, the ball always gets to its target}
\end{align*}
\]

Our uncertainty is resolved when we hear the rest of the sentence. So the uncertainty is only temporary. However, if we are forced to stay uncertain for too long, we will find the sentence more difficult to decipher. This is because we have to hold too many clauses in memory until the sentence is complete and the full structure can be analysed. In conclusion, we can say that local ambiguity will make comprehension better and easier but taxes the memory. On the other hand, keeping local ambiguity to a minimum will make things easy for memory but the listener will face the risk of making interpretation and comprehension mistakes.

**Standing ambiguity** refers to cases where sentences remain syntactically ambiguous even after they are completed. For example, the sentence

\[
\text{I saw the man with the binoculars}
\]

Remains unclear even when it is complete. Sentences such as these can only be interpreted within a broader context than in which they occur.
Models of Sentence Parsing

Consider the sentence below:

The old man the boats.

This is clearly an ambiguous sentence. How we eventually understand ambiguous sentences such as this has been explained in two ways by psycholinguists. The first, referred to as the garden path model, suggests that most people attend to only one meaning of the sentence they are listening to. Therefore, with ambiguous sentences like the above, they must go back when they reach the end of the sentence and try to reparse in order to make sense of what they hear. Alternatively, there is also the possibility that both meanings are processed at the same time but only one is attended to. When, upon reaching the end of the sentence, it was discovered that the wrong interpretation was chosen, the listener just switch to the alternative interpretation, which has already been processed. This is known as the constraint satisfaction model.

Evidence from studies done on how we deal with syntactic ambiguity show some support for both models above. Before we go on to the next section, you should take note of something. Syntactic ambiguities are present in both written and spoken sentences. However, unlike written sentences, much of the ambiguity in spoken sentences are resolved by the prosodic features present in speech. Listeners use stress and intonation patterns and pauses to mark clause boundaries, thus decreasing the probability of misinterpreting the sentences they hear. Indeed, there are considerable evidence to support this.

Models of Sentence Processing

The goal of sentence processing is to extract meaning from the incoming acoustic stimuli as quickly as possible. Studies of sentence processing suggest that we do this by accessing the lexicon (our store of words) and the syntactic structure to arrive at the propositional representation of the sentence we hear. We then discard the surface structure, to make way for more input.

Psycholinguists have come up with various theories of the cognitive operations involve in extracting meaning from the acoustic signals received. Earlier models stress on a 'serial' kind of processing; language processing is seen as a four stage operation that is followed in a strict sequence. First is phonological processing, followed by lexical, syntactic and finally semantic processing. According to this model, meaning cannot be extracted until the earlier stages have been accomplished. An important proposal of this view is that syntactic processing must precede, and thus be conducted independently from, the semantic processing of a sentence. This is sometimes referred to as the principle of syntactic autonomy.
You can correctly guess that these early models drew much criticism, one of the
most important being that the studies done did not take into account the influence and
function of prosody. Although the syntactic autonomy principle cannot be disregarded
altogether, much of recent research in sentence processing has focussed on whether both
syntactic and semantic analyses occur together and continuously interact as we hear a
sentence.

Let us put the above argument in simpler terms. We have already looked at and
agreed that comprehension is achieved quite rapidly by fluent speakers/listeners, despite
the ambiguities and constraints that occur in the language and process. Although we
can’t disregard all elements of the autonomy principle, recent research in how we make
sense of what we hear, i.e. speech, is now looking at two possibilities:

a. the syntactic autonomy principle model (Garrett, Bever & Fodor, 1966) states
that the comprehension process would be fastest if sentences can be analysed
syntactically at a stretch without having to cross-check against possible semantic
interpretations (gotten from prior context) from time to time.

b. the interactive model (Tyler & Marslen-Wilson, 1977) argues that
comprehension would be fastest if information from all levels of analysis (i.e.
phonological, lexical, syntactic and semantic) could be used simultaneously as we
receive the auditory input.

The interactive model of sentence processing starts with bottom-up processing, where
the listener’s ears detect and analyze the speech signal and processes it upward, from the
acoustic waveform level to the recognition of semantic relations (i.e. meaning). At the
same time, the listener is also utilizing top-down processing, they make guess at what is
to come next based on the words, syntactic structure and meaning already analyzed.
Proponents of an interactive view of sentence processing believe that this interaction of
knowledge-driven, top-down information and sensory-driven, bottom-up interaction
occur with all kinds of speech signal input. In other words, with this model, the listener
carries out as much syntactic and semantic processing as much as possible and
concurrently. This is why we can process speech so rapidly and why this model is also
known as the on-line interactive model.

Lastly, Kintsch (1988,1994) and Van Dijk & Kintsch (1983) has come up with a
more thorough model of sentence processing known as a coherence graph. In this model
or description, comprehension is achieved in cycles on a segment-to-segment basis. The
basis of sentence processing is propositions, with referential linkages made at subsequent
levels or cycles. One important insight from this view is the notion that in language
processing, propositions are distributed across sentences, i.e. in discourse, and within
sentences.
Summary

In this unit we have looked sentence processing, i.e. how we comprehend the speech signal that we hear or see. One striking characteristic of the process is the speed with which it is accomplished, regardless of the inherent ambiguities found in the language. Studies show that we use linguistic structure to predict the structure and meaning of what we hear. The syntactic structure of sentences seems essential in understanding the meaning. Studies show that listeners ordinarily try to determine the meaning of a sentence as quickly as possible and then discard its surface structure from memory. What is remembered are the ‘gist’ or propositions. Psycholinguists are divided about how we actually make sense of the sentences we use and hear. Some feel that it is an on-going interaction between bottom-up and top-down processing while others argue that comprehension must follow a strict order of processing which is independent of one another.
UNIT 7  PRODUCTION:  PLANNING AND EXECUTION

Objectives

After reading through this unit and doing the exercises, you will be able to:

- Define terms related to speech production.
- Discuss what is actually involved in speaking.

Reading

Aitchison  Chapter 9 ( pgs. 183 - 198 )
Chapter 11 ( pgs. 237 - 259 )
Introduction

Speech is the most natural form of communication. Indeed, speaking seems to require no effort whatsoever. People just open their mouths and their larynx and tongues seem to take care of the rest, automatically turning their thoughts into words. Is this effortlessness true? A closer look would prove such a belief to be deceptive. Speaking becomes difficult when we attempt to convey something specific, for example telling a story, describing how to change a flat tire, or explaining a joke. In these instances, we find ourselves planning where to start, what to include and what to omit, what words to use. Even with such preparation, in day to day conversations, we often find ourselves at a loss for words, stopping in mid-sentence, correcting sentences we have just uttered and even producing spoonerisms. What appears to be so simple and automatic at first glance is in fact quite complicated!

Speaking

What exactly is speaking? Looking back to what we have discussed, we speak in order to have some effect on our listeners. For example, a lecturer lectures to convey information to her students and therefore alter their state of knowledge (as I am attempting now!). A comedian tells a joke to get his audience to laugh. Your significant other asks you to get him or her a drink so that his or her thirst is quenched. It is clear that speakers begin with the intention of affecting their listeners in a particular way, then choose and utter the sentence(s) they believe will do just that.

Speaking, it would appear, can be divided into two types of activity – planning and execution. Speakers first plan what they want to say based on the purpose of their speech. Then they put this plan into action, uttering the appropriate segments, words, phrases and sentences. However, the distinction between planning and execution in an instance of speech act is not clear cut; at any moment speakers are usually doing both.

Planning

In planning what to say, speakers must consider, among others:

a. knowledge of the listener – depending on what you, as a speaker, thinks your listener knows, you will refer to a third person as “she, my neighbor or the lady over there”.

b. the cooperative principle – you expect your listener to assume that you are trying to be cooperative, i.e. you tell the truth, you are informative, relevant and clear. You can therefore say “What a beautiful day!” when it is raining outside and confidently expect your listener to catch the irony.
c. **the reality principle** – you expect your listener to expect you will talk about comprehensible events, states and facts, not about unreal possibilities.

d. **the social context** – you will address your listener either as ‘Ah Chai’ or ‘Mr. Chai’ depending on his status and the formality of the situation.

e. **the linguistic devices available** – many things that you may want to express have no ready linguistic term, i.e. there is simply no single expression for them. You may therefore be forced to use circumlocution such as “When I held my child for the first time, I feel like I am holding an angel and I am all hot, cold, excited, sad and scared at the same time”.

These considerations, and others, will each play a role in what you eventually decide to say. Planning also involves considering the unit being planned, i.e. the discourse, sentence or constituent levels. In discourse, your problem is to organize the information in such a way that at the end of your speech, all the necessary information has been expressed and understood. In sentences, your problem is more tactical; you must come up with a sentence that fits the discourse at that point in the conversation and accurately conveys the right piece of information. At the constituent level, your problem is even more specific. You need to pick out the appropriate words that will tell your listener the objects, events and facts your sentence is meant to convey. You must however bear in mind that these levels are not strictly distinct in speaking.

Let us now turn to plans that you and I, as speakers, make at the discourse, sentence and constituent levels.

**Discourse Plans**

When we tell a story, for example a fairytale, we would normally start with “Once upon a time” and end it with “And they live happily ever after”. This is what is expected by our listener(s). The same is true for other stories. Our listener(s) would expect us to sound as if we are telling a story, i.e. follow the structure of a story – telling about the setting, plot, characters, the beginning and ending etc. Now, at first glance, other discourse types such as conversations, descriptions and explanations, do not seem to have a structure (like stories). But we will see that this is far from true. But before we delve into that, let us take a look at what is meant by discourse having structure.

Discourse has two kinds of structure, i.e. **hierarchical** and **local**. The **hierarchical** structure of discourse is determined by the purpose of the speech. Depending on what you want to convey, you would decide where to begin and end, how to proceed and what to emphasize. This is your **hierarchical structure**, an overall plan of how to get your message across. No matter whether the discourse is a dialogue or a monologue, speakers have this overall hierarchical plan they try to abide by throughout. Apart from following the hierarchical structure, speakers also take feedback into consideration. In your conversations, your next sentence is often dependent upon the
feedback that you get from your listener(s). This is termed the local structure. So although we normally have a pretty good idea about what we want to say and how we want to say it, our exact words and sentences would depend on the feedback that we get at that point in our conversation. Successful conversation is the result of being able to manipulate these two structures.

Let us now look at one common discourse pattern. Conversations seem simple enough – they usually begin with ‘hello’ and end with ‘goodbye’ and have a lot of talk in between. But you and I know that this is not so as each speaker in a conversation has a particular goal or purpose in mind. In order for us to have a successful conversation, we must be able to coordinate our speech so that we can jointly achieve our goals. Many studies have looked into how conversations are carried out; among the popular aspects are turn taking, openings and closings.

For a conversation to be successful, the major requirements that must be met include:

Each participant should have a chance to talk.
Only one person should talk at a time (in order to be heard).
The gaps between turns should be brief (so there is a flow of ideas)
The order of speakers and how much they speak should not be fixed in advance.
There must be a mechanism for deciding who should speak when.

According to studies done, these requirements are met by speakers following the rules of turn taking below:

#1. The next turn goes to the person addressed by the current speaker.
#2. The next turn goes to the person who speaks first.
#3. The next turn goes to the current speaker, if he speaks before anyone else.

Violation of any of these rules would result in an unsuccessful conversation. I am sure we have all had instances when these rules were broken and we end up being very frustrated, as we did not get a chance to say what we wanted to say. (Do painful teenage years come to mind?)

Opening conversations require the speaker to get the listener’s attention and signal the desire to communicate while the listener must show willingness to participate. This is achieved through the summons-answer sequence. The summons sequence could be in the form of “Hi, Sherry,” or “Excuse me,” or a tap on the shoulder. The answer sequence would characteristically be “Hi, Rosli,” or “What?” or “Oh, hello Cik Sharifah!” In such sequences, the summoner must provide the first topic of conversation. This is, of course, only logical. Telephone conversations also follow the same sequence, except that the telephone ring is considered the summons and the “Hello” or “Sherry’s office” or “Ricky Martin speaking” is the answer. Again, any violation of the sequence will cause a miscommunication or no communication at all, especially in a telephone conversation.
Closing conversations is a bit more complicated. And nowhere is this more clear than in a telephone conversation, on which most studies were conducted. Normally, participants in a telephone conversation close following two main steps — they agree to close and they actually close the conversation. The first step is the most difficult to accomplish. It is solved by the speaker using a pre-closing statement, such as “We. ell” or “So..oo” or “Okay” and the listener responding, which could be one of two things:

(1) bring up a topic not mentioned in the conversation before.
(2) agree to participate in closing the conversation.

These conventions are actually very powerful and we only get an inkling of how so when they are violated.

Sentence Plans

In all but the most structured discourse, speakers, at the very least, have to select the sentence they will say. Their sentence plans may fall into three categories — propositional content, illocutionary content or thematic structure. A speaker must decide on all three aspects before he or she can compose a sentence.

The basis of all sentences is the propositions, i.e. units of meaning or ideas a speaker wants to express. This is termed the propositional content. For example, a description of a house may be broken down into the following propositions:

- You enter the door
- The door is at the front
- The bedroom is on the ground floor
- The bedroom is left of the hallway

These propositions must be given illocutionary content, e.g. “You are entering the front door” (an assertion) or “Enter the front door” (a request), and thematic structure, e.g. “A bedroom is on the left” or “On the left is a bedroom,” before they can become sentences. Another problem that speakers may face is which proposition to choose. Studies have shown that speakers overcome this problem using the simplicity criterion. This simply means that speakers tend to opt for simple propositions. When describing vertical arrangements, you would tend to follow a top-down and not bottom-up description (“A is above B” rather than “B is below A”). With chronological events, you would tend to describe from first to last (“The girl jumped before her sister screamed” instead of “Her sister screamed after the girl jumped”). And speakers tend to focus on the positive rather than the negative in comparisons and affirmation and negation (“A is larger than B” rather than “B is smaller than A”). We must bear in mind, however, that there are certain situations where the use of negation is necessary, e.g. when you want to explicitly deny some prior expectation.
The next consideration is the illocutionary content (or speech acts) of the sentence, i.e. whether you want to put the proposition in the form of an assertion, a yes-no question, a warning and so on. This choice is critical to the development of the discourse. An added point to keep in mind is that each of this illocutionary content can vary in directness and formality. So speakers have two considerations to make: which speech act to choose and what form (direct/indirect) to express it in. Although many studies have been done, little is known about how speakers make these choices.

Lastly, speakers have to decide on the thematic structure, i.e. what is to be the subject and predicate, what is to be given and new information, and what is to be frame and insert. Please refer to what has been discussed earlier about subject and predicate and given and new information. Frame and insert specify the framework of the utterance and its contents. Usually, these three aspects of thematic structure coincide, i.e. what is being talked about (the subject) and the setting (frame) within which the predicate and new information are placed, are known to the listener. Nevertheless, they could also be separated.

Constituent Plans

You and I know that when we speak, we do not decide on each sentence all at once, i.e. select all the adjectives, adverbs and articles that we are going to use. It is equally illogical to say that we follow the opposite extreme, i.e. wait until we have uttered a word before selecting the next. What we actually do is somewhere in between; we plan more than one word but not the entire sentence at once. This is termed as constituent planning.

It would seem that there is little problem in choosing the noun, adjective and so on for the sentence. But the whole process is actually just as complicated as the planning of discourse and sentences. Studies have shown that speakers seem to build a skeleton plan for the sentence as a whole. This skeleton is then fleshed out with words. For example, every noun phrase in English is either definite or indefinite. Speakers would use the article "the" (the black box) if they thought what was being talked about was known to their listeners. They would use the article "a" (a black box) if the subject was mentioned for the first time. Speakers, therefore, select articles on the basis of what they think their listeners do or don't know.

Execution

As we have discussed above, speaking involves planning, i.e. speakers choose a general structure for the discourse, form a skeleton of the sentence to be uttered and then select words to fit this skeleton constituent by constituent. The next thing to do is to execute this plan. This means to actually produce voice or sound, which involves getting the speech organs to function (as all of you have taken BBI 3202 English Phonetics and Phonology, this shouldn't be any problem at all!).
Again, at first glance, the execution of speech seems commonplace. But you and I know that speaking isn't just planning and executing what has been planned. Most of the time, we speak before we have everything all planned, and thus we make speech errors. We pause, search for words and back up. At the articulation stage also errors may occur such as slips of the tongue and mispronunciations. As the execution of speech, i.e. the transmission of orders from the brain to the speech organs and muscles can't be observed directly, all information regarding it comes from studies of speech errors.

These studies show that execution generally involves two phases: the articulatory program phase and the articulation phase. Forming an articulatory program means forming a plan in working memory that tells the articulatory organs and muscles what to do when. The articulation phase means filling out the phonetic segments to the structures already assembled at the articulatory program phase. Each of these phases is fraud with potential mistakes that will result in speech errors.

Summary

In this unit we have tried to look at what is involved in producing an utterance, which is truly a complicated process. There seems to be two basic activities involved - planning and executing. Speaking becomes complex because speakers tend to accomplish both activities at the same time. At the planning stage, speakers often begin executing a constituent before they have it fully planned. As a result, they are forced to stop, repeat or correct themselves. Planning becomes difficult due to difficulties in planning the discourse, planning each sentence and finding the appropriate words. At the execution stage, speakers often fail to have an articulatory program or their program is not complete. As a result, they do not have a skeletal structure on which to fit the various constituents or they make mistakes in their choices. Slips of the tongue are examples of such problems.
UNIT 8  THE BRAIN AND MEMORY

Objectives
After reading through this unit and doing the exercises, you will be able to:

- Define terms related to the brain and speech production.
- Define terms related to memory.
- Discuss the function of memory in comprehension and production.

Reading
Aitchison  Chapter 3 ( pgs. 47 - 65 )
Introduction

In this unit, we will take a brief look at the brain and memory. As the text gives a good account of the brain and its function, I will not repeat it here. What I will elaborate on is the relevance of our biological specialization to language acquisition and use. These are important points to keep in mind as they have a direct bearing on pedagogy and what goes on in the classroom. I will also highlight the more important aspects of memory and their link to language acquisition and use.

The fact that humans are the only species to have invented and used language has led to a deeply felt conviction that we are unique. We are in fact assumed to be the only rational animal (though if we look around at the destruction that humans are capable of, this assumption seems way off the mark!). The human capacity for language is seen as different in kind from the capacities for communication in other animals. Humans are believed to have a specific innate capacity for language. It is therefore impossible for other species to acquire human language as it has certain features that are unique to the species.

Physiological Factors in Language

Two major features of the human physiology are especially well suited for communication by vocal language. The important question here is whether these features are specific to language or whether they are part of the human greater mental capacity. The two features are the peripheral and central nervous system.

The peripheral system includes the human's superior articulatory apparatus that gives them a distinct advantage in producing speech sounds. Humans have evolved a complicated set of facial muscles which makes it possible for the lips, cheeks and jaw to be moved freely. There is also a muscular and very flexible tongue and upper and lower teeth that form a ridge all around the gum. Finally, the pharynx is much longer than in other primates.

Features of the central nervous system, although not evolved exclusively for language, also give humans an advantage. Compared to their primate cousins, humans possess a larger and heavier brain, a greater degree of cerebral convolution and larger 'associative areas' between the limbic cortex and the auditory and visual areas. As a result, humans differ from other animals in many cognitive abilities other than language. It has been argued that these features may have given humans deeper cognitive abilities in general, and these have allowed them to use language.

Specifically, however, two features of the central nervous system are claimed to be directly related to the human capacity to utilize language. The first is brain lateralization. Studies of accident and stroke victims and experimental studies done show a left hemisphere dominance for language in most people. In fact, studies show that the left hemisphere is specialized for propositional, analytic and serial processing of
information. The right hemisphere, on the other hand, is more adapted for perception of appositional, holistic and synthetic relations. It could be that human’s ability to use language is a direct result of the function of the left hemisphere, and not so much the left hemisphere having a specialized capacity for language.

The second argument for human’s language specific capacity is the critical period for language acquisition. Researchers, like Lenneberg (1967), has argued for a critical period for language acquisition, which coincides with the lateralization of the brain. This period is believed to roughly start from birth till puberty. The completion of lateralization marks the end of the critical period. However, other studies have shown that lateralization may be complete by age two, long before the advent of puberty. The argument for a critical period is far from conclusive and the notion can’t be used as proof of human’s exclusive ability to use language.

As a whole, the biological evidence suggests that humans possess specialized capacities that give them an advantage in the use of language, but not necessarily for language alone. Thus, it is not surprising that other species also use some form of language; albeit, none as sophisticated as human language. Recall all that we have read and discussed about animal communication.

Memory

Memory plays an integral part in comprehension and production. In comprehension, memory serves as the storehouse of information, old and new, and of propositions. In production, it is also the reservoir of propositions that will be uttered. So our look at comprehension and production is not complete without making a short detour what memory is all about.

Factors Affecting Memory

Remembering is often said to be a reconstructive process. This is because when we hear or read something, we do not normally remember the data word for word (unless under very specific circumstances). What we store is the gist of the message. Depending on the amount of time and other factors, this gist can be very fragmentary when we try to recall the original message. So what we do is try to reconstruct the gist from the fragments.

Among the factors that may affect memory, and constitute its stages, are input, storage and output.

As stated earlier, we normally listen for meaning, i.e. we do not remember the verbatim wording or even the direct meaning of the speech we hear. What usually happens is we listen to the information and make inferences based on it. What we actually store are these inferences. There are, however, situations when verbatim recall is
necessary, for example when an actress has to memorize her script. But this requires much repetition and hard work, and is quite different from normal remembering. So the input that we actually store is the meaning or interpretations of what we hear or read.

Traditionally, psychologists have identified two types of storage: short-term memory and long-term memory. Short-term memory is where exact wording is stored for brief periods through active rehearsal or repetition, e.g. repeating a telephone number while frantically searching for pencil and paper. Without this active repetition, input in short-term memory will be lost rapidly. Short-term memory, therefore, has a limited capacity. Earlier studies have shown that this capacity holds about seven unrelated words. But later studies show that we don't remember by number of items but by 'chunks'. A 'chunk' is a meaningfully coded unit, e.g. a complete phrase or sentence.

Long-term memory, on the other hand, store more permanent information. Thus it deals more in meaning, i.e. propositions, than in sounds and, for all practical purposes, has an unlimited capacity. Long-term memory is now more popularly termed as schema or schemata. Different experts have defined and divided the schema differently such as background knowledge, world knowledge, linguistic competence and communicative competence etc. All that you have to understand is that the terms essentially refer to the same thing - long-term memory.

The last factor is output, which can be in the form of recognition or recall. Studies have shown that in both processes, people use three kinds of information. First, they may use their linguistic knowledge to decide what are possible, grammatical constructions and what are not. Second, they may use world knowledge to decide what are plausible realistic situations and what are not. Thirdly, they may refer to conventions about discourse to decide how paragraphs are organized and how conversations are carried out.

Summary

In this unit, and in the text, we have seen how humans are biologically superior to other species in terms of their articulatory make-up. Both the peripheral and central nervous systems in humans are predisposed to utilizing and producing language. How this capability actually comes about is still under hot debate but one attribution is to the superior cognitive processing of the human's bigger brain. Related to this capability is the function of memory, i.e. how all the data is stored.
UNIT 9 LANGUAGE AND THOUGHT

Objectives

After reading through this unit and doing the exercises, you will be able to:

- Define linguistic universals and linguistic relativity.
- Discuss the Sapir-Whorf hypothesis.
- Discuss the place of linguistic universal study in second/foreign language pedagogy.

Reading

Steinberg Chapter 8 ( pgs. 158-173 )
Introduction

In this unit, we will consider the idea of linguistic universals, something that Chomsky is very involved in. Before we go any further, I would like to clarify that what is given here is meant to supplement the text. Therefore, please read the chapter in the text first as it gives an excellent discussion on issues pertinent to this unit. Because of this too the discussion here will necessarily be general in nature. So, let's start.

Language does not exist in a vacuum. We use it for a variety of purpose and it is therefore molded by many factors. As it is used for transmitting ideas, its structure and function must reflect the ideas. Because it must be spoken and understood easily, its structure and function must be within the limitation of your physiological and processing capacities. And as people from different social and cultural backgrounds use it for communication, these forces mold its structure and function too. But once it is acquired and used, language wields a power of its own. As it is affected and molded by the above factors, so language affects and molds people’s daily lives. Language helps us to think about some things and stops us from thinking of others. To put this in simple terms, the whole argument is like two sides of the coin. Is it reality, i.e. the world and the whole experience of living, that gives us the words and sentences that make up our language, or is it the words and the sentences that are in our language that makes us reality in the way that we do? The debate is still going on.

Universals and Relativity

These two sides of the same argument are termed as linguistic universals and linguistic relativity.

If languages are molded in part by the propositions, physiological and processing capacities and social-cultural factors, then they should have certain common features. These are termed linguistic universals. There will no doubt be differences from language to language due to different conditions. For example, since the Garo of Myamam need to distinguish among many kinds of rice than say a European, their language has more words for rice than any European language.

At the opposite is linguistic relativity. If language molds people’s lives, it is only logical to deduce that people who speak different languages will think differently. The Garo is able to think about rice in more ways than any European simply because they have more words for rice. The two famous proponents of linguistic relativity are Edward Sapir and Benjamin Lee Whorf. In what is now commonly called the Sapir-Whorf hypothesis, Whorf claims that language influences thought, i.e. how you perceive and organize your reality. This is an important statement about the relation between language and thought.

Just looking around us, however, will tell us that we can’t consider linguistic relativity without considering universals. If we were to describe three shirts, we can’t do
so without presupposing that they are made of cloth. We can talk about differences in colour, texture, sleeve length etc. Differences can only be described with respect to constancies. The same is true for languages. We have stated above that the Garo has more words (nouns) for rice than a European. But to state this presupposes that both languages have nouns. It would seem then that linguistic relativity presupposes linguistic universals.

Linguistic universals have a direct link to language and is therefore worth further study. In a world that is getting smaller each day, language as a communication tool has taken an immense importance. This is especially true for 'global' languages like English. It follows then that teaching and learning this language are important pursuits. Towards finding an efficient and effective way of teaching and learning languages, examining linguistic universals could shed some useful light. The differences in languages definitely have obvious limits. Every human language, because it is used by humans living on Earth, must:

- be learned by children
- be spoken and understood by adults easily and efficiently
- contain the ideas people normally want to convey
- function as a communication system

Using these conditions to examine language, it is not difficult to find common features in all human languages. What is the significance of this? It follows that if we know what is common to all languages, it might be possible to describe what is inherent in the human ability to speak, understand and acquire language. In other words, if these linguistic universals could be delineated, learning a foreign language may not be that difficult anymore as each of us would already have common, basic structures and processing capacities. This is essentially what Chomsky tried to accomplish.

**Summary**

As stated at the start of the unit, these notes are supplementary to the text. What I have done here is to draw your attention to the age-old debate about whether language is influenced by thought or whether it is thought that is influenced by language. This debate has acquired greater significance in the world that we live in now due to the advances in technology that has made global communication an everyday occurrence. It follows that learning more than one language is advantageous; consequently, second and foreign language pedagogy has received much focus. Knowing what underlies all languages would help greatly in their teaching. And perhaps, for students like you and me, a lot less 'painful'.
UNIT 10 FIRST AND SECOND LANGUAGE: ACQUISITION/LEARNING

Objectives

After reading through this unit and doing the exercises, you will be able to:

- Define first and second language acquisition.
- Discuss the similarities and differences in language acquisition.

Reading

Steinberg Chapter 10 (pgs. 203-217)
Chapter 11 (pgs. 219-240)
Introduction

We have come to the end of our look at psychology and language. All that you have read earlier, in the module and in the text, is actually applied here, i.e. in your teaching and your students’ learning. Not much of what you have read earlier can be taught directly in class. It is for you to interpret and apply to your students and their learning situations.

The text gives quite a thorough coverage of the topic, so I will not attempt to repeat things here. What I just want to highlight are the similarities and differences in language acquisition.

Similarities and Differences in Language Acquisition

There are a number of similarities and differences. Among the more obvious are as given below.

<table>
<thead>
<tr>
<th>First Language</th>
<th>Second Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>involves initial linguistic experience -</td>
<td>usually mastered by someone who</td>
</tr>
<tr>
<td>the 'language slate' is blank</td>
<td>already speaks a first language</td>
</tr>
<tr>
<td>usually acquired in a home</td>
<td>seldom context bound - language use</td>
</tr>
<tr>
<td>environment - language use is tied to</td>
<td>is often based on simulations or</td>
</tr>
<tr>
<td>immediate surroundings, i.e.</td>
<td>imaginary /decontextualized events</td>
</tr>
<tr>
<td>therefore context bound</td>
<td>removed form the learning situation</td>
</tr>
<tr>
<td>acquired by infants with no strong</td>
<td>acquired by adolescents and adults</td>
</tr>
<tr>
<td>social identities (either gender,</td>
<td>with strong social identities - more</td>
</tr>
<tr>
<td>ethnicity or social status) - easier to</td>
<td>difficult to acquire as the L2 is</td>
</tr>
<tr>
<td>acquire as they take on the social</td>
<td>symptomatic of different cultural</td>
</tr>
<tr>
<td>identity of the language</td>
<td>values and social status</td>
</tr>
<tr>
<td>lack linguistic metaknowledge as this is</td>
<td>has linguistic metaknowledge as</td>
</tr>
<tr>
<td>the first experience with language -</td>
<td>already possess L1 - conscious and</td>
</tr>
<tr>
<td>unconscious and spontaneous</td>
<td>planned manipulation of language =</td>
</tr>
<tr>
<td>manipulation of language =</td>
<td>formal/unnatural</td>
</tr>
<tr>
<td>informal/natural</td>
<td></td>
</tr>
</tbody>
</table>
Summary

Studies on language acquisition have shown that there are strong similarities between first and second language learners in the order of acquisition of language structures. The conclusion that we can make is that second language learning must necessarily be more conscious and difficult, as L2 learners already possess their L1 system. What needs to be done is to make the L2 learning environment as supportive as possible so that learning will become more fun, therefore making it almost unconscious. As the text gives an excellent discussion on this, please refer to the chapters assigned and try to answer the discussion questions.