

Chapter 2

The Theory of Academic Lecture Comprehension

2.1 Introduction

This chapter explains theories on academic listening and its representative form—academic lecture comprehension. Various theories probing into discourse structure and signaling cues of academic lectures and note-taking are critically reviewed. A comprehensive theory of lecture comprehension construct, grounded in empirical research, will be essential for developing a valid test of lecture comprehension ability.

2.2 The Nature of Academic Lecture Comprehension

Academic listening usually means listening to lectures or presentations on academic topics in a college or university (Buck 2001: 168). In terms of academic setting, listening can happen in either classrooms or conferences. Students in universities where English serves as a main medium of instruction are supposed to participate in all kinds of academic events such as lectures, tutorials, seminars or discussions and therefore Lynch (2011) simply grabs a more handy set of terminology that divides academic English into two main sections: One-Way and Two-Way listening. Vandergrift (2007: 202) separated academic listening from other types of communicative one-way listening in his classification of listening comprehension studies. These categorizations signal that academic listening can be perceived as both one-way and two-way listening in a rather broad sense or, in a narrow sense, as the rigid one-way listening with little interaction, e.g., listening to academic lectures, because lectures remain a major educational form in universities and the largely monologue lecture may remain the principal genre of academic instruction (e.g., Johns 1981; Richards 1983; Waggoner 1984; Benson 1994; Lee 2009). They can serve an efficient and effective way of delivering information to large groups of

students. Therefore, listening to lectures and taking notes is representative of academic listening activities in university settings and students' ability to grasp academic lectures to a considerable extent defines their academic listening competence.

Academic listening is usually an indispensable part of EAP curriculum. In formulating goals and objectives for an effective EAP course, teachers must bear in mind what needs students have and how to help them achieve their academic success, and unanimously, the course will need to assist the students in improving their listening skills, their strategies for lecture comprehension and skills of note-taking (Hyland 2006: 82). Lecture comprehension is placed at the priority for teaching academic listening. In academic contexts, listening is crucially important as it is often considered the first skill students need to grasp. Without adequate listening competence, students may feel challenged or rather at a loss when they are required to grasp the main idea of an academic lecture. Today, despite the fact that more lectures are provided with visual assistance, such as Powerpoint or whiteboards in classrooms, "students learn better by listening, selecting, organizing, writing down and reviewing" (Myers 2000). How students react to academic lectures is to determine their future academic achievements in the university.

Given the fact that the core part of academic listening is lecture comprehension with its "paradigmatic stature" (Waggoner 1984: 7) at the tertiary level of education and its significance to students, the focus of the study is to explore the nature of academic lecture comprehension and its construct. In this section, we shall go over the most distinctive features of academic lectures that have so far drawn the most attention from researchers.

2.3 Discourse Structure of Academic Lectures

Academic lectures as a representative discourse genre in the academic setting contain complex structures and hence lecture comprehension defines a listener's academic success and poses a challenge for second-language listeners (Buck 2001: 43). Pertinent researches indicate that even L2 learners with adequate language proficiency may find it difficult to comprehend an academic lecture (Hyon 1997; Young 1994). Researches have explored the reasons behind the phenomenon and found out difficulties in lecture comprehension not only lie at word or sentence recognition level, but also at the discourse level. For example, Olsen and Huckin (1990) reported that ESL students could understand detailed facts of a lecture assisted by their "information-driven" listening strategy yet failed to understand the main ideas of it, resulting in a deficiency ascribed to the lack of "point-driven" listening strategy. Dunkel and Davis (1994) drew a similar conclusion that lecture comprehension depended less on comprehension of individual sentences, but more on interrelation of them and the macro-text structure.

2.4 Macro Structure of Academic Lectures

Much of the research into the discourse structure of academic lectures has been done during the 1970s (Flowerdew 1994), which coincided with the growth in discourse analysis studies carried out by van Dijk (1975, 1977, 1980, 1981, 1983) and other scholars. So far, inquiries into structural analysis of narrative discourse have become prolific while comparatively, how academic lectures are conventionally organized can be a research question in need of equal attention. An important assumption related to the investigation of the macro structure of academic lectures is that if we can “characterize the formal schema of university lectures for our students, their processing of information will be greatly facilitated” (Young 1994: 160).

The notion *Macrostructure* was actually initiated by a German linguist Bierwisch in the year of 1965. In 1980, van Dijk published his book *Macrostructures: An Interdisciplinary Study of Global Structures in Discourse, Interaction, and Cognition*, a cornerstone of research on macrostructure of discourses. Thereafter, van Dijk (1983) presented his important theory of multi-layer analysis of discourse as follows:

- a. microstructure → sentences, phrases, words
- b. macrostructure → semantic content
- c. superstructure → conventional form of discourse

According to van Dijk (1983: 189), macrostructures are the semantic content for the terminal categories of superstructural schemata. Though cognitive comprehension of macrostructures and superstructures is an integrated process, macrostructures are defined by so called “macro rules” (ibid, 190) based on the meanings of the sentences of a discourse. Macro rules are employed to process those propositions (a proposition is a short statement of some fact) expressed by sentences in a way of deletion, generalization and construction:

1. Deletion: Given a sequence of propositions, delete each proposition that is not an interpretation condition (e.g., a presupposition) for another proposition in the sequence.
2. Generalization: Given a sequence of propositions, substitute the sequence by a proposition that is entailed by each of the propositions of the sequence.
3. Construction: Given a sequence of propositions, replace it by a proposition that is entailed by the joint set of propositions of the sequence. (p. 190)

In one word, macrorules help generate the global meaning of a discourse from local sentential meanings and macrostructures of discourses are composed of semantic units that cover a sequence of propositions. Academic lectures are loaded with information and macrorules are subconsciously employed by listeners in order to grasp the gist and major content of the lecture.

2.5 Discourse Signaling Cues of Academic Lectures

Logical relation of sentences and the macro as well as micro structure of an academic lecture are indicated by cues. That is to say, if learners fail to recognize the cues that signal sequence of thoughts in the lecture and the organization of it, most probably, he or she will meet difficulties in grasping the main points of the lecture. Those cues are actually metalinguistic devices that function as directional guides to remind listeners of the incoming information (Tyler 1994). Though literature concerning the role of discourse cues in listening comprehension has been rare, there are still a number of empirical studies which have addressed the issue thoroughly.

Chaudron and Richards (1986) categorized discourse signaling cues into macro-and micromarkers. That is to say, macromarkers refer to the cues that function at the macro discourse level to indicate the relationship between main parts or transitions of the discourse. For example, sentences like “*Today, I am going to talk about writing.*” can be viewed as macromarkers. On the other hand, micromarkers refer to cues that function at the micro discourse level to mark relationship between sentences or as pause fillers. *And, so, well, um,* etc. can all be called micromarkers. Chaudron and Richards’ classification of discourse signaling cues pertains to van Dijk’s paradigm of discourse structures. Researchers also name those macromarkers as metapragmatic signals which facilitate comprehension and function as “macro-organizers” as they signal what is coming up in the lecture, e.g. “Let me start with... (topic marker); So let me shift to... (topic shifter); To sum up... (summarizer), etc.” Academic lectures of a written style are often hard to follow because they lack such signaling cues. So, when we come to categorize discourse signaling cues, with van Dijk’s macrostructure theory, we can define macro discourse signaling cues as those indicating the gist or general ideas of a discourse or essential semantic components of a discourse while micro discourse signaling cues as those indicating sentential or phrasal relations.

Oxford (1993: 207) found out that compared with the first language learners, L2 learners could remember the main ideas of a text instead of detailed information because they were inclined to find clues that facilitate their memory, such as linguistic clues and structural clues like “first, second, the most important”, etc. and nonverbal clues. Tompson (2003) compared metadiscourse and intonational signaling cues in undergraduate lectures with recordings of commercial EAP listening materials. Pickering (2004) compared native-speaker and international teaching assistant’s use of pitch and pause cues to create “intonational paragraphs” in their classes. Rickards et al. (1997) conducted a research concerning the role of discourse signaling cues in L1 listening comprehension. They did find that the presence of signaling cues in the text resulted in a significant increase in the quantity of listeners’ notes on both the overall content and major points. The afore-mentioned research (Chaudron and Richards 1986) that successfully classified discourse signaling cues also drew the conclusion that cues really helped and a more specific finding was that macromarkers proved to be more conductive than micromarkers.

Dunkel and Davis (1994) indicated that discourse markers did not have significant influence on L2 listeners' comprehension of English lectures.

However, a counter research conducted by Flowerdew and Tauroza (1995) demonstrated that learners who had listened to a lecture with micromarkers performed significantly better than those who had listened to the lecture without them. Therefore, it remains a considerable space for further researches on the effect of discourse signaling cues in listening comprehension.

To date, a more recent study that highlights the important role of discourse signaling cues in L2 listening comprehension is Jung's study (2003) which involved 80 Korean learners of English as a Foreign Language. Of the 80 learners, half listened to the lecture with discourse signaling cues, and the other half listened to the lecture without those cues. Half of the learners in each group performed summary tasks; the other half performed recall tasks. The findings showed that discourse signaling cues played an important role in L2 listening comprehension.

Likewise, another similar study conducted in EFL environment aimed to explore whether discourse markers in listening instruction could enhance the EFL college students' English listening proficiency and the finding was positive that discourse-marker-based listening instruction could improve students' listening comprehension (Zhang 2012).

Therefore, for non-native speakers, the inability to recognize discourse signaling cues that help them make sense of the macrostructure of an academic lecture is thought to be one of the major impediments toward successful academic lecture comprehension.

2.6 Construction of Discourse Structure

Macro discourse structure studies on a certain genre of discourse were also taken up in the cognitive perspective (van Dijk and Kintsch 1977). A model toward text comprehension was proposed by van Dijk and Kintsch (1983) based on the notion of "local microlevel" and "global macrolevel" of the semantic structure analysis of texts. The model includes "macro-operators" that aim to "reduce the information in a text base to its gist" as the "theoretical macrostructure" and in the process of information reduction, "macro-operators" function under the control of a schema, "a theoretical formulation of the comprehender's goals" (van Dijk and Kintsch 1983: 363). In another word, van Dijk and Kintsch attempted to generalize readers' comprehension processes by analyzing their recall data. It makes a lot of sense to listening research too. Based on Kintsch and van Dijk's analysis of comprehension processes in reading, Field (2013: 103) termed structure building as the highest level of listening comprehension which emphasized the construction of a "hierarchical pattern of what has been said, consisting of a set of major points with

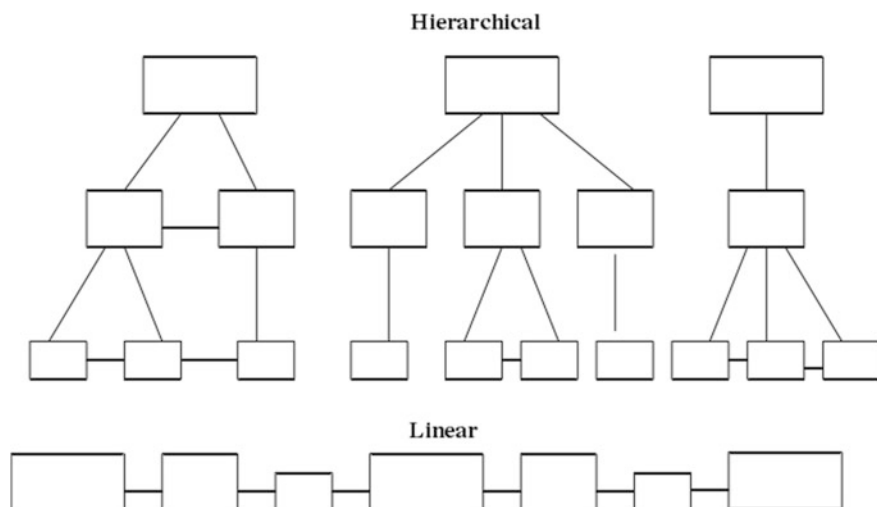


Fig. 2.1 1 Successful and unsuccessful structure building (Source: Field 2008: 254)

subordinate points attached to them”. Inside academic listeners’ mind, building a discourse structure is crucially important.

Field differentiated successful learners and unsuccessful learners in terms of their discourse structure building in the following figure (see Fig. 2.1). It shows unsuccessful listeners fail to build “a complex network of interrelated ideas but rely instead upon a linear string of small units of meaning”, but successful listeners’ schemata of conventional ways on how different discourses are organized can help them build complex hierarchical structures (Field 2008: 254).

In the realm of listening assessment, Field (2013: 93) criticized conventional listening test formats because they failed to test what he termed as “discourse construction” and defined three levels of meaning representation of an utterance, i.e., a proposition, an enriched meaning representation relating to the current utterance and a structured discourse representation relating to the wider speech event:

Identifying the relative importance of utterances that have been processed, linking idea units, integrating incoming idea units into a developing discourse representation and building a hierarchical structure representing the speaker’s line of argument. (p. 133)

If an academic lecture is considered a typical speech act in the academic setting, a structured discourse representation of it heavily influences students’ comprehension of the lecture theme and content.

2.7 Note-Taking of Academic Lectures

In the bulk of literature concerning academic listening, note-taking is also a conspicuous theme that has drawn much attention from researchers. The role of note-taking in helping students to reflect upon lecture contents and retrieve relevant information has long been a focus of academic listening research (e.g. Song 2011) and in order to gain some insights on students' comprehension process, a number of researchers studied students' notes (e.g., Dunkel 1988; Chaudron et al. 1994).

But it is worth noticing that arguments centering upon the function of students' note-taking in their academic lecture comprehension are two-sided. Researches that attempt to assess students' understanding of lectures have shown that quality or quantity of students' notes does not necessarily reflect their level of understanding (Alexander et al. 2008). For example, Rost (1990) pointed out there was no direct correlation between quantity or quality of notes and students' level of comprehension. Notes can be a record of words students hear and recognize without capturing the main points of a lecture or realizing the logic relations between recorded information units. In the research conducted by Chaudron et al. (1994), the conclusion was that there was no strong or consistent relationship between quantity and quality measures of candidates' notes and their lecture comprehension performance and hence note-taking quality should not be considered as a direct measure of comprehension. Furthermore, Dunkel (1998) investigated undergraduates in the US who were required to take notes while listening to a video-taped lecture and at the end of the lecture, all the participants' notes were collected and a test of retention was administrated. The conclusion of the investigation was that quantity of notes didn't count much; instead, terseness and inclusion of the main points were directly related to the retention test achievement.

Rost (1994) suggested that accurate understanding of the lecture content may not be students' main goal of listening and furthermore, King (1992) found that students who generated their own questions or summaries during the lecture could remember the content better than those who only took notes. It may prove that the generative strategies students actively formulate help them process information more efficiently while listening.

On the other hand, according to Song's research (2011) on note-taking and academic listening, note quality measures, in particular the number of topical ideas found in the notes and the organization of these notes, may be good indicators of test takers' L2 academic listening proficiency.

Therefore, more researches should be carried out for a better understanding of the cognitive nature of note-taking and its function in academic lecture comprehension.

2.8 Importance of Investigating Lecture Comprehension Construct

Buchman argued in his AUA model (2010) that test developers need to define the constructs or abilities to be assessed before designing the test. The warrant is that the test developer needs to explicitly define the ability or abilities which should be understood by the stakeholders. Illustration of the nature of academic lecture comprehension helps us understand its construct better on the ground that lecture comprehension does have its unique features and hence should be assessed properly. Thus, the construct definition for an academic listening assessment is treated as the basis for the kinds of interpretations we can make from test-takers' performances.

What is a construct then? We can regard a construct as a specific definition of an ability based on which an assessment can be developed (Bachman 2010: 43). Ability is still an abstract notion which suggests a latent or underlying capacity. So, a feasible definition could be that "a construct is a meaningful interpretation of observed behavior" (Carol 1998: 33). Observed behavior in testing context naturally refers to observable "product" or "output", normally a score or verbal description (Bachman 2010: 212). In another word, if the score is a label for a listening test, then listening comprehension should be the construct that assigns meaning to the score which already functions beyond a label. Though construct should be the abstraction of a comparatively stable trait, it is still measurable according to the afore-listed definitions and validity of a test is by large defined as "the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of interpretations and actions based on test scores" (Messick 1989: 13), or simply put, to what degree both empirical evidence and theories support the proposed construct. Therefore, the key issue of validity is construct validity (Kane 2001) and "construct validity equals validity because validity as a concept by itself is a construct" (Zou 2005: 186).

The history of construct validity can be traced back to 1950s. In order to enrich the interpretations assigned to psychological assessments, the American Psychological Association Committee on Psychological Tests found it necessary to broaden the concept of validity. In the 1954, Paul Meehl and Robert Challman, the two members of a subcommittee first introduced the terminology of construct validity (American Psychological Association 1954), which was further developed by Cronbach and Meehl (1955). The following definition of construct validity is given by Ebel and Frisbie (1991: 108):

The term construct refers to a psychological construct, a theoretical conceptualization about an aspect of human behavior that cannot be measured or observed directly. Examples of constructs are intelligence, achievement motivation, anxiety, achievement, attitude, dominance, and reading comprehension. Construct validation is the process of gathering evidence to support the contention that a given test indeed measures the psychological construct the makers intend it to measure. The goal is to determine the meaning of scores from the test, to assure that the scores mean what we expect them to mean. (p. 108)

All the same, based on Ebel's definition, a psychological construct is not directly assessed but the theoretical construct can be testified by evidence gathered during the validation process. The current project follows the same logical pattern that starts from a hypothesized theoretical construct of academic listening comprehension to verification of the proposed construct by collecting different sets of empirical data.

A valid test construction normally starts from the understanding of what is going to be measured. In order to develop a valid test of listening comprehension, the developer of the test must first examine the nature of a listening comprehension construct and identify the important components of listening comprehension assessment that need to be addressed (Dunkel 1993: 180) and the theory should at least provide "adequate definition of component constructs and veridical explanation of how the components relate" (Dunkel 1993: 183). Obviously, the prerequisite of a successful academic listening assessment pertains to the scientific research on the construct of it and conceptualization of its components so that a reliable and valid academic listening test can be developed with a convincing warrant. The challenge of developing an academic listening test is to ensure that "the cognitive processing activated in the test taker by a test task should correspond as closely as possible to what they would expect to do in the academic listening context" (Taylor 2011: 96).

By all means, the definition of lecture comprehension construct is not only confined to the theoretical model of language ability, but rather extended to other perspectives, including a needs analysis of the components of language ability for performing certain language use tasks in the target language or even cognitive strategies and performance on tasks, with options such as: a. the frame of reference for the construct definition based on a language teaching syllabus, a needs analysis, a theory of language ability, components of language ability to be included (e.g. abilities needed in the EAP curriculum); b. strategic competence; c. topical knowledge (e.g. whether topical knowledge should be part of the academic listening construct); d. performance (e.g. academic listening skills or tasks) (Bachman 2010: 212–221).

In the current project, the definition of lecture comprehension construct covers the theoretical model of the ability itself, the skills needed to perform academic lecture comprehension tasks successfully and the cognitive processes or strategies chosen by the test-takers in the testing condition.

2.9 Conclusion

This chapter reviews and discusses the current theoretical development in the field of lecture comprehension. The literature mentioned above centers upon the active and constructive nature of the cognitive processes that listeners employ to make sense of an academic lecture. The complexity of cognitive processes involved in lecture comprehension poses challenges to the test format of it if we attempt to

assess the high-level discourse construction generated by the listener with reference to the lecture. In light of this, Chap. 3 addresses the construct of lecture comprehension and the current approaches to the design and construction of tests of lecture comprehension ability.

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Testing Lecture Comprehension Through
Listening-to-summarize Cloze Tasks
The Trio of Task Demands, Cognitive Processes and
Language Competence
Wang, H.
2018, XIII, 207 p. 16 illus., Hardcover
ISBN: 978-981-10-6201-8