

Karolina Kotorowicz-Jasińska

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Karolina Kotorowicz-Jasińska
Maria Curie-Skłodowska University,
Lublin, Poland

A process approach to listening comprehension. Types of processing.

A traditional way of looking at listening is from the angle of its final outcome, namely comprehension (Field 1998, 2008). Many a practitioner tend to focus excessive attention on the product of listening in the form of answers to comprehension questions and fail to consider aspects of listener's behaviour or the routines for handling the incoming speech. In second language acquisition literature, however, it is common to divide listening into a number of component processes, which constitute a framework for investigating listening comprehension.

The following article provides an insight into the processes by which the listener comprehends a text. It also examines varieties of input that the listener attends to, together with the types of processing involved.

1. The dual nature of listening comprehension processes

A number of second language listening researchers point to the dual nature of listening comprehension, underlining two major aspects of the process (Driven and Oakeshott-Taylor 1984, Lund 1991, Buck 2001, Field 2008). The first one, unanimously referred to as decoding,

involves transferring the acoustic input that the listener receives into meaningful forms of language (Field 2008). In order to make sense of the speech signals, the receiver employs a number of operations, ranging from translating acoustic cues into sounds, through identifying words and phrases, to tracing grammatical patterns in the auditory input they are exposed to. In other words, the decoding component of listening comprehension takes place on a number of levels, each of which requires the listener to engage in several different processes (Table 1).

Table 1. Examples of important L1 decoding processes (Field 2008: 115)

- **Phoneme level**
Identifying consonants and vowels
Adjusting to speakers' voices
- **Syllable level**
Recognising syllable structure
Matching weak syllables and function words
- **Word level**
Working out where words begin and end in connected speech
Matching sequences of sounds to words
Identifying words which are not in their standard forms
Dealing with unknown words
- **Syntax level**
Recognising where clauses and phrases end
Anticipating syntactic patterns
Checking hypothesis
- **Intonation group level**
Making use of sentence stress
Recognising chunks of language
Using intonation to support syntax
Reviewing decoding at intonation group level

Based on its multidimensionality, the decoding stage of listening comprehension can be further divided into several steps, each dealing with a different aspect of the input and, as a result, calling for different types of processing (Driven and Oakeshott-Taylor 1984, Rost 2002). The continuum of listening processes begins with the reception and

conversion of sound waves by the auditory system in the brain, i.e. neurological processing of acoustic input. Once this is completed, listeners need to assign meaning to the sounds they hear by means of linguistic processing, which involves a number of operations. First, the receiver discriminates between and categorises the sounds through, what Rost (1994) calls 'categorical perception,' consisting of a number of phonological procedures of speech perception. Later, the listener employs word recognition processes, which are believed to constitute the basis of spoken language comprehension and emerge as a significant predictor of listening comprehension success (Mecartty 2000, Field 2003, Rost 2002, Rost 2006).

While semantic considerations tend to dominate understanding and it has been proved that for any higher-level comprehension processes to take place, a sufficient amount of lexical recognition must occur (Bonk 2000, Flowerdew and Miller 2005), it is not the final step in linguistic decoding. In order to understand the language in the input, the incoming speech needs to be mapped onto the grammatical model of the language (Rost 2002). The application of grammatical rules and using the knowledge of the linguistic system to divide words into meaningful constituents is defined as parsing (Rost 1994, Flowerdew and Miller 2005). By combining words into phrases and attaching phrases to clauses, grammatical parsing significantly contributes to comprehension and allows the listener to create a proposition model of the incoming speech (Rost 2002), which undergoes further processing during the second of the two major operations which the listening comprehension entails, namely meaning building.

The latter phase of listening, referred to as 'encoding' (Oakeshott-Taylor 1984), 'comprehension' (Lund 1991) or 'meaning-building' (Field 2008), is described as the construction of meaning with the use of both decoded language and the listener's prior knowledge. It has been substantiated that decoding at the level of sounds, words and grammar helps the listener deal with the input to a limited extent and arrive merely at a literal meaning of an uttered sentence, which falls short of the true comprehension of what the speaker means. For the listener to fully understand the message sent, i.e. to expand the

meaning of the message conveyed by the words uttered, add the incoming pieces of information to the overall picture of the talk and decipher the speaker's intentions, he or she needs to draw upon their knowledge of the world as well as the contextual clues in the discourse. The complexity of the meaning-building stage of listening comprehension is shown in Table 2, whereby different kinds of processes involved in the stage are displayed.

A parallel can be drawn between Field's (2008) meaning-building stage and what Rost (2002) calls pragmatic and psycholinguistic processing, which seem to be component parts of the encoding phase. As stated above, linguistic decoding is only the first step of listening comprehension, which requires the receiver to address the context in which the speech act occurs, and infer the speaker's intentions, i.e. to process the input from the pragmatic perspective. Also, meaning-building phase involves psycholinguistic processing, referring directly to comprehension, and embraces such steps as relating language to concepts in the listener's memory and to references in the real world, updating mental models or building mental representations of the discourse (Van Dijk 1987).

Evidently, in order to fully understand spoken language, there are several types of knowledge to be drawn upon: phonological, semantic, syntactic, pragmatic or factual knowledge about the world, which seems to confirm the complexity and multidimensionality of the listening process (Flowerdew and Miller 2005). At the same time, the dual nature of listening emerges, as all the processes involved fall into two major groups of decoding and encoding. The key difference between the two stages lies in the material that is processed during each of them (Field 2008). While decoding is strictly connected with input (i.e. the language of the message), meaning building appears to be highly reliant on context (pieces of evidence and information in a discourse which go beyond its literal meaning). Based on the kind of material dealt with, the listener applies various knowledge sources in two distinctive manners: bottom-up and top-down, which will now be discussed in greater detail.

Table 2. Examples of important L1 meaning-building processes (Field 2008: 117)

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| <ul style="list-style-type: none"> • 'Context': using knowledge sources Drawing upon: world knowledge – topic knowledge – cultural knowledge Analogy with other similar listening encounters • Deriving meaning Storing the literal meaning of an utterance Accepting an appropriate meaning Checking understanding • Adding to the meaning Making inferences Dealing with pronouns Dealing with ambiguity • Selecting information Selecting relevant information Recognising redundant information • Integrating information Carrying forward what has been said so far Connecting ideas Self-monitoring for consistency • Recognising the overall argument structure Noticing connecting words used by the speaker (<i>On the other hand...</i>) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

2. Bottom-up and top-down processing

As stated above, comprehension processes rely on several types of information. Understanding takes place when the message and different kinds of knowledge are matched against each other (Faerch and Kasper 1986). The matching process begins either with extracting information from the input and integrating it with the elaborate knowledge system or with predicting possible meaning on the basis of prior knowledge and interpreting the input in the light of the created expectations. In the first case, the listener attends to individual units of

meaning and combines them in a hierarchical order, from phoneme to discourse level (Flowerdew and Miller 2005, Vandergrift 2007). In other words, the recipient responds to perceptual information and engages in data-driven, bottom-up processing (Field 1999, Vandergrift 2003). In the second scenario, the listener uses context and prior knowledge to make inferences and build a conceptual framework of the discourse, employing knowledge-driven, top-down processing. Clearly, listeners apply different knowledge sources using top-down and bottom-up processes, which, metaphorically, reflect a hierarchical view of the stages through which listening proceeds (Field 1999) and can be graphically captured in the Speech Recognition Framework as shown in Figure 1.

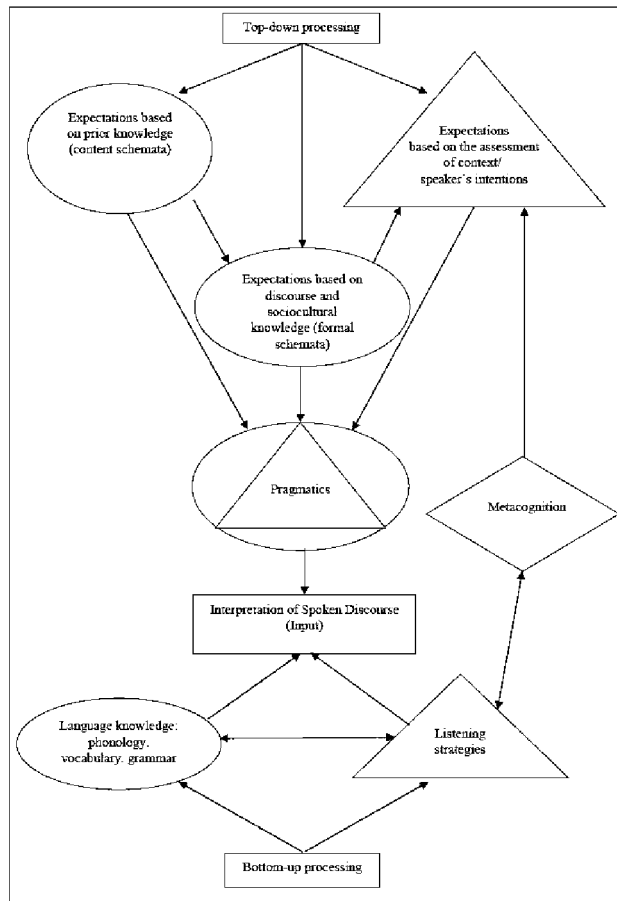


Figure 1. Speech Recognition Framework (Celce-Murcia and Olshtein 1993: 104).

A matter of particular interests to second language acquisition scholars is how exactly the recipient of the message attends to the meaning conveyed. It has been proved that language processing is “massively parallel (...) [and] interactive” (McClelland and Elman 1981: 119). Instead of building understanding starting with either basic linguistic units or with the use of previous knowledge, listeners

process the input in both directions simultaneously, so that top-down and bottom-up processes closely interact and influence each other (Field 1999, Celce-Murcia and Olshtain 2000, Rost 2002, Flowerdew and Miller 2005, Vandergrift 2003). It has been substantiated that in proficient listeners top-down and bottom-up processes interact in such a way that deficiencies in information on one level are compensated for with the information provided on the other level (Peterson 1991). Such premise finds confirmation in Interactive Compensatory Hypothesis developed by Stanovich (1980, cited in Field 2008, Tsui and Fullilove 1998), providing an explanation for how readers¹ understand texts despite certain difficulties (Figure 2). If the recipient decodes the linguistic message successfully, or when the confidence in input is high, the compensatory value of top-down processing is reduced and the application of prior knowledge will serve the purpose of enriching fully decoded message. However, when the reader or listener cannot rely on the input due to their deficiencies in the linguistic knowledge, top-down approach will be a crucial element in arriving at the meaning of the text.

¹ Research into listening comprehension draws heavily upon the findings of second language reading studies. As it is often assumed that comprehension is a general construct involving different modalities, many researchers and theoreticians use research results on reading to hypothesise about listening comprehension (Vandergrift 2006).

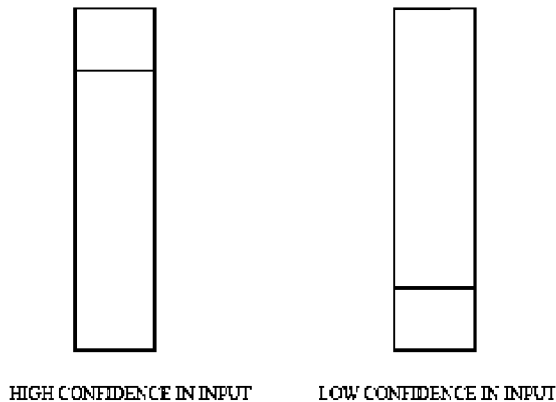


Figure 2. Stanovich's Interactive Compensatory Hypothesis (Field 2008: 134).

The corollary of such a view is that the interaction between top-down and bottom-up processing depends to a large extent on second language proficiency. According to Stanovich's perspective, poor listeners make considerable use of top-down processes employing them compensatorily to build the meaning of a text. On the other hand, some researchers have demonstrated that beginner-level L2 listeners devote so much attention to perceptual operations at a word level that little capacity remains for activating top-down knowledge (Peterson 1991) and that below a certain threshold of language proficiency listeners are unable to activate higher level operations (Anderson and Lynch 1988). Also, studies have shown that bottom-up processing is more important for listeners of poor language proficiency, as they cannot use background knowledge effectively (Tsui and Fullilove 1998). A similar view seems to be held by Wilson (2003), who postulates the primacy of bottom-up processes, which, in the heyday of Comprehension Approach were considerably undervalued. He suggests that the ultimate goal of listening comprehension is to hear and understand what is actually uttered,

without the need to compensate for the deficiencies of bottom-up skills.

Summing up, there may be little agreement as to the degree in which L2 learners rely on top-down and bottom-up processes, yet all models of the listening process seem to acknowledge the two aspects of comprehension. A variety of labels have been given to the two types of processing, ranging from 'perceptual' or 'higher-level operations' (Peterson 2001), through 'lower- and higher-level processing' (Faerch and Kasper 1986), to "apprehending linguistic information" and "relating that information to a wider context" (Carrel and Freedle 1972). However, despite the multiplicity of terms

(...) scholars seem to have arrived at similar conceptualisations of listening comprehension, and the fact that they use different terminology suggests that they have arrived at this understanding more or less independently. This adds considerable credibility to the two-stage view of listening (Buck 2001: 52).

and endorses the dual nature of oral discourse comprehension.

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