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Foreword

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Although the most prominent property of speech *perception* is auditory, rather than visual or haptic, contributions of visual and proprioceptive cues and features to speech perception are not to be ignored. However, the latter cues and features will not be addressed in this volume.

Since speech perception invariably serves purposes of linguistic communication and exchange, access to meaning, *i.e. comprehension*, is central to communicative and interactive functions in speech and language. Hence speech perception and comprehension have continually received particular attention from researchers in linguistic areas as diverse as phonetics/phonology, morphology, syntax, semantics, lexicology, language acquisition, *foreign language* acquisition... Investigations carried out in the latter domain allow pinpointing several unanswered questions in the complex process which goes from articulatory signals, to acoustic signals and finally to accessing meaning. Studies in language comprehension in general, and in foreign language comprehension in particular, indeed underscore questions such as: 1) What is the role of articulatory and acoustic details in acoustic-phonetic decoding? 2) What is the role of prosody? 3) How does prosody interact with segmental factors? 4) How do specific phonemic systems constrain foreign language perception and comprehension? 5) What are the brain functions that underlie perception and comprehension?

The relevance of such questions becomes more salient in the context of perception and comprehension of a foreign language, because of perturbations induced in subjects confronted with novel speech cues and features to be “deciphered”. Today, it is almost commonplace in speech studies dealing with interaction between production and perception to state that one can perceive only what one knows how to produce. Thus one important conceptual leitmotiv across all results in the studies

♦ Rudolph Sock, Nuzha Moritz and Albert Hamm editors for this issue, *Strasbourg University*.

presented here is *difficulty* in the cognitive nature of perceiving and understanding speech as a foreign language. Listeners, in general, encounter difficulty, albeit in varying degrees, in the perception and comprehension of a foreign language due to novelty of production strategies deployed by native speakers.

All contributions in this special issue emanate from outstanding researchers preoccupied with the understanding of speech perception and comprehension, specifically in a foreign language perspective. Notions directly related to perception and comprehension are analysed and thoroughly discussed in the different articles. Hence, the question of true beginners, subject idiosyncrasies, identification and categorisation, acquisition and linguistic history of subjects are frequently brought up and examined; so also are notions related to articulatory strategies, timing and coordination, spectral properties of the speech signal and integration of prosodic factors.

The present special issue originates from initial presentations that were made at a meeting entitled “From perception to comprehension of a foreign language” that was held in Strasbourg in November 2010. A preliminary selection process targeted contributions which were more related to problems in speech perception and comprehension of a foreign language. Then all submitted articles underwent a peer review process before the final selection was made.

The paper by **Myriam Piccaluga, Sandrine Clairet, Véronique Delvaux, Kathy Huet and Bernard Harmegnies** is a laboratory simulation of the situation in which French L1 true beginners are confronted for the first time with word-initial aspirated voiceless stops in L2 (e.g. in English), and are attempting to reproduce them as faithfully as possible. Measurements have been made directly on the imitative productions of the speakers. The subjects showed a significant variation of VOT (Voice Onset Time) and burst intensity in response to variations of the same parameters in the stimuli. However, full targets were not frequently achieved. Their results also revealed a huge inter-individual variation (with no apparent link with the linguistic history of the speakers), *i.e.* either different speakers were sensitive to different properties of the stimuli, or they were sensitive to the same properties but responded differently to them.

Takeki Kamiyama, in his study, tells us that Japanese /u/ is produced with a fronter tongue constriction with less closed lips than the French /u/. Such an articulatory configuration results in higher F1 and F2 ($F2 > 1000$ Hz) than those of the French /u/. He simulated variations in tongue position and lip configuration using VTCalc (Maeda, 1982). A perceptual identification test was conducted using these synthesised vocoids with native French-speaking listeners and native Japanese-speaking listeners. His results show that the back tongue position and a high degree of labiality were both essential for French speakers to perceive the French /u/, whereas Japanese speakers perceived the Japanese /u/ in zones where French speakers identified /u/ and /ø/. These findings suggest that Japanese-speaking learners

of French tend to perceive the French /u/ and /ø/ as a vowel of the same category (corresponding to the Japanese /u/), and thus have difficulty in distinguishing them in both perception and production.

Kofi Adu Manyah's preliminary study reports observations and results obtained in an experiment on the discrimination of two tone contrasts in the Twi language, high and low tones with specific relative pitches assigned to them, by French subjects. Results show that subjects' response patterns differ depending on whether a target tone was produced in isolation or in a carrier sentence context. Listeners' performance rate of stimulus discrimination was higher in isolated words than in carrier sentence. Intra syllabic phonemic comparison suggests that listeners' performance rate is not the same for stimuli produced in isolation and stimuli produced in a carrier sentence.

Isabelle Hesling, in her contribution, explains that whatever the language, speech is characterized by an "Expression" dimension, which is made up of grammatical rules, lexical choices, and an "Expressivity" dimension which is made up of the kinesthetic and prosodic aspects of speech, speech significance being the result of the combined association of these two different – but complementary – dimensions. She posits that a key question is to succeed in helping foreign language learners to acquire this expressivity dimension, hypothesising that this specific prosodic information will facilitate the integration and memorisation of the expression dimension. To answer this key question, she addressed certain works in linguistics and psycholinguistics. Then, the study focuses on neurosciences and more particularly on speech perception cerebral processing. And finally results from a behavioural study, outlining the impact of a specific sensory integration of the prosodic dimension, is discussed.

Monika Pukli's paper presents a case study of two bilingual children (aged 2y 5m and 3y 6m) learning English. It is based on a six-month-long experiment exploring the subjects' spontaneous production of English. The aim was to look at the role perception plays in the acquisition of English phonology, assuming that it is especially efficient in very young children. She also intended in her investigation to establish the efficacy of a non-laboratory approach in perception studies. Her experiment has shown that for some phonological features, perception played a crucial part while for others there were intervening factors that made the acquisition imperfect. Transfer was considered as the most probable disturbing factor but could not be verified as such. Results thus prove that 1) young children are indeed very good acquirers of novel phonological features, 2) that her approach is effective but needs to be combined with other types of analyses, and 3) that interfering phenomena, especially transfer and on-going maturation due to the young age of her subjects, are very elusive to test.

Bernard Gautheron endeavours to promote phonetic transcription applications for pronunciation learning and oral comprehension. His old and challenging idea is to train phonologically deaf listeners to active listening and understanding without

any conscious notion of how the sounds of a language are produced. The new deal is to create a tool that permits both to easily transcribe speech phonetically on different kinds of multimedia files (audio or audiovisual) and to visualize on a video screen the edited/embedded phonetic subtitles synchronously with the uttered speech. This is made possible by using a keyboard and specific phonetic fonts ergonomically adapted to each language and using a subtitle application.

Indeed, the areas covered here are varied and reveal the richness of scientific approaches in the study of speech perception and comprehension of a foreign language. They deal with laboratory simulations, imitative productions, targets and variability, articulatory and acoustic cues and features, discrimination of tones, expression and expressivity, integration, memorisation and brain functions underlying prosodic factors, bilingualism, phonological constraints, transfer and spontaneous productions in a developmental perspective, tools for pronunciation learning and oral comprehension... Languages examined in this special volume are diverse and unrelated, thus further indicating the wealth of knowledge unveiled in these studies related to foreign language comprehension. The languages investigated here are English, French, Hungarian, Japanese and Twi.

As a final prefatory remark, we hope that this quite broad spectrum of investigations in the area of speech perception and comprehension presented in this special issue, with particular emphasis on perception and comprehension of speech as a foreign language, will give the reader an up-to-date review of the state of knowledge in the domain. The authors and editors welcome the reader's input.