Invitation à la soutenance publique de thèse

Pour l'obtention du grade de Docteur en Langues et lettres

Monsieur Georgios CHRISTODOULIDES

EFFECTS OF COGNITIVE LOAD ON SPEECH PRODUCTION AND PERCEPTION

Lundi 5 septembre 2016 à 14h30

à la Salle du Conseil PSP (A224)

Place Cardinal Mercier 10
1348 Louvain-la-Neuve

This thesis studies the effects of cognitive load on the production and perception of speech, and especially the prosodic characteristics of French speech produced under high levels of cognitive load. Cognitive load reflects the mental demand placed by a task on the person performing it, and is derived from the limited capacity of cognitive systems, such as working memory and attention.

Four experimental studies were conducted: (1) an analysis of voice quality features using EGG, while speakers performed simple tasks under dual-task and time pressure; (2) an automatic prosodic analysis of speech produced by speakers recalling memorised information of increasing complexity, and answering comprehension questions; (3) a study on the prosodic characteristics of simultaneous interpreting, which is a cognitively-demanding task involving both production and perception; and (4) a study of speech produced by pairs of participants engaged in a series of tasks (memorisation and summarising, dialogue to exchange information, debate, repeating syntactically unpredictable sentences and a simple game) while performing the Continuous Tracking and Reaction task in a driving simulator.

Results indicate that the effects of cognitive load on prosody are mainly detected in the temporal organisation of speech (e.g. an increase in the number and duration of silent pauses, and in the variability of articulation rate) and the segmentation of utterances. Cognitive load incurs an increase in the number of occurrences of major prosodic boundaries inside minor syntactic units (chunks), while silent and filled pauses are placed incongruently with the syntactic structure. Results regarding pitch and voice quality features are also presented.

Further contributions of this thesis include the development of software tools for the automatic annotation of French spoken corpora (DisMo: morphosyntactic tagging, detection and annotation of disfluencies; Promise: syllabic prosodic prominence and prosodic boundary detection; a tool for extracting temporal measures from annotated dialogues), the development of a new tool for working with spoken corpora (Praaline), and the development of 3 corpora of French speech produced under cognitive load (approximately 50h in total).

Le jury est composé de Mesdames et Messieurs :

Prof. Michel FRANCARD (UCL), Président

Prof. Anne Catherine SIMON (UCL), Promotrice

Prof. Piet MERTENS (KU Leuven)

Dr Antoine AUCHLIN (Maitre d'enseignement et de recherche, Université de Genève)

Dr Céline DE LOOZE (Trinity College Dublin)

Prof. Arnaud SZMALEC (UCL/PSP)