

Research seminar in Psycholinguistics

2019-2020 planning

(Update : 15.05.2020)

- Monday 30st September 2019 (PA28_126): Prof. **Pascal Perrier** (Université Grenoble-Alpes, Département Parole & Cognition)

Bayesian GEPETO: a model of speech motor planning using probabilistic descriptions of internal models and speech motor goals.

Abstract: I will first present our Bayesian model of speech motor planning that uses representations of the link between motor commands and sensory outputs (also called internal models), and target based definitions of speech motor goals in the auditory and somatosensory domains. Then I will illustrate how such a model helps tackling some key issues of speech motor control and speech motor planning. I will show how our model accounts for anticipatory coarticulation by minimizing motor command changes along a sequence. I also will show how the basic principles of our model helps understanding and interpreting how speech motor learning interacts with the specification of the speech motor goals in the auditory domain, as demonstrated by experimental studies such as Shiller et al. (2009) or Lametti et al. (2014). Finally I will explain how our model proposes to integrate the phenomenon of individual sensory preference that has been evidenced by Lametti et al. (2012) and questions the hypothesis of a general hierarchical organization of the auditory versus somatosensory specifications of the speech goals.

- Monday 4th November 2019 (PA28_126): Assist. Prof. **Despina Papadopoulou** (Aristotle University of Thessaloniki, School of Philology)

Discussing SLA theoretical models in the light of comprehension and production data on agreement and determiners

Abstract: The aim of this talk is to discuss current theoretical approaches to Second Language Acquisition (SLA) in the light of corpus and experimental L2 data, with special emphasis on L2 Greek. I will focus on the Interpretability Hypothesis (Hawkins & Hattori, 2006; Tsimpli, 2003a; 2003b; Tsimpli & Dimitrakopoulou, 2007) and the Feature Reassembly Hypothesis (Lardiere, 2009). The Interpretability Hypothesis suggests that the L2 uninterpretable features, which are absent from the L1 grammatical system, are inaccessible to L2 learners and are expected to cause learnability problems. According to the Feature Reassembly Hypothesis, on the other hand, inaccuracies in the L2 output are attributed to erroneous mappings between the morphosyntactic features and the lexical items, especially in cases in which the L2 maps features differently than the L1. The predictions of the two theoretical models will be addressed by means of data on determiner and nominal agreement from adult and child learners of L2 Greek.

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- Monday 25th November 2019 (PA28_126): **Julien Da Costa** (University of Geneva, Department of Learning and Teaching Technologies)

Projet de recherche intégrant les technologies numériques - Discussion et retour d'expérience

Abstract: L'intégration des technologies numériques dans les pratiques professionnelles offre de nouvelles possibilités pour l'entraînement mobile et distant, l'accompagnement et le suivi des patients, la collecte de données de recherches ou encore la création d'activités de rééducation innovantes. Cependant le développement de ce type de technologies n'est pas simple a fortiori lorsqu'il s'articule avec un projet de recherche. Nous proposons ici un partage d'expérience sur les réussites et difficultés de différents projets impliquant des technologies à L'UNIGE. Nous aborderons notamment les phases de projets régulièrement sous-estimées ou les avantages et inconvénients de différentes possibilités de développement.

- Monday 2nd December 2019 (M3341) : Dr **Simon Gorin** (University of Geneva, Developmental Cognitive Psychology)

Domain-generalty of serial order representations in short-term memory: comparisons between the verbal and musical domains

Abstract: Language and music both rely on strong serial ordering requirements. For instance, during speech production or when playing music, it is important to serially organize the to-be-produced information into a production plan. This ability is constrained by serial order short-term memory. The comparison of ordering phenomena characterizing verbal and musical short-term memory tasks thus represents an opportunity to better understand the nature of sequencing mechanisms for auditory information. In this talk, I will address the question of the domain-generalty of short-term memory serial order processes. First, I will review the evidences suggesting that the representation of serial order information for musical and verbal materials in short-term memory tasks relies on shared, amodal mechanisms. I will also describe some studies showing differences between the two domains, suggesting the existence of domain-specific ordering mechanisms. Next, I will address the role of expertise to explain the differences existing between the order phenomena observed in the two domains. Finally, I will propose a theoretical framework that can account for both similarities and differences between verbal and musical short-term memory.

- Monday 9th December 2019 (PA28_126) : Dr **Hélène Løevenbruck** (Université Grenoble Alpes, Laboratoire de Psychologie et NeuroCognition)

The ConDialInt Model: a neurocognitive account of condensation, dialogality and intentionality in inner speech

Abstract:

“Woo-hoo, donuts! Marge, you’re awesome!”

“Mmm, Homer!? It was modelling clay...!”

When you silently read a comic strip, can you take different voices, different perspectives? Introspective descriptions and empirical data suggest that, because of the diversity of its uses, inner speech comes in many forms. Three main dimensions have been described.

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Along condensation, condensed inner speech forms are deprived of acoustic, phonological and even syntactic qualities, whereas expanded forms display articulatory and auditory properties. Along dialogality, inner speech can be monological, when we engage in internal soliloquy, or dialogal, when we recall past dialogues or imagine future conversations. Along intentionality, it can be intentional (when we deliberately rehearse material in memory) or it can arise unintentionally (during mind wandering). To account for varieties of inner speech along these dimensions, we have introduced the ConDialInt Model, a neurocognitive sketch of inner speech, cast within a predictive control framework. Using fMRI, we probed varieties of inner speech along dialogality and intentionality, to examine the validity of the neuroanatomical correlates posited in ConDialInt. Condensation was also informally tackled. Our results provide neuroanatomical evidence compatible with the assumptions made in the ConDialInt Model.

- Monday 16th December 2019 (PA28_126) : Dr **Maria Vender** (University of Verona, Department of Cultures and Civilizations)

Artificial grammar learning in typical and atypical populations: Evidence from a modified Simon Task featuring the Fibonacci grammar

Abstract: In this talk I will present the results of two experimental studies investigating artificial grammar learning (AGL) in typical and atypical populations by means of a modified Simon Task featuring the Fibonacci grammar. In the first study, the main interest was that of verifying how bilingualism and dyslexia interact in implicit learning, by comparing their performance in the acquisition of the statistical regularities characterizing the Fibonacci grammar. It has been shown, indeed, that implicit learning can be effortful for people suffering from developmental dyslexia, who have been found to exhibit problems in the detection and abstraction of rules under complex conditions, showing nevertheless a sensitivity to structural regularities in AGL (Pavlidou et al. 2010). AGL in bilingualism has not been extensively studied and the limited results available are mixed, evidencing in some cases a bilingual advantage (Onnis et al. 2018) and no differences in others (Yim & Rudoy 2013). The interaction between bilingualism and dyslexia in AGL has not been investigated yet. Our study evidenced that all children, independently from bilingualism and dyslexia, were able to learn the relevant regularities, although group differences were found, with bilinguals being overall faster than monolinguals and dyslexics less accurate than controls. Importantly, an advantage of bilingualism in dyslexia was found, with bilingual dyslexics performing consistently better than monolingual dyslexics and, in some conditions, at the level of the two control groups. In the second study, instead, we focused both on sequential and hierarchical learning in a group of school-aged typically developing monolingual children with the main aim to disentangle the two types of learning. To do so, we administered the Modified Simon Task comparing two grammars, Fibonacci and its expansion Skip, which share the very same transitional regularities, thus providing identical opportunities for sequential learning, while crucially differing in their hierarchical structure. We found evidence of both sequential and hierarchical learning, thus suggesting that implicit learning involves an early activation of strategies of hierarchical reconstruction, based on a straightforward interplay with the statistically-based computation of transitional regularities on the sequences of symbols.

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Monday 20th January 2020 (PA28_126) : Prof **Silvia Brem** (University of Zürich, Department of Child and Adolescent Psychiatry and Psychotherapy)

Reading acquisition and learning-related reorganisation in the language network: insights from multimodal EEG-fMRI

Abstract: Fluent reading relies on a predominantly left lateralized, highly specialized network of brain areas that act in concert to process printed words. As a keystone academic skill, reading is learned within the first years after school enrolment. Learning the correspondences between letters and speech sounds represents a first step and a critical basis in formal reading acquisition and involves a reorganization of the language network. During the process of learning, specific parts of the reading network such as the left ventral occipito-temporal cortex (lvOT) start to adopt a crucial role in processing print. Deficient integration of letters and speech sounds along with impaired processing of print are considered core problems of children with developmental dyslexia – a severe reading disorder. Despite the critical role of reading acquisition on the reorganization of the language network, there are only very few studies that have examined visual processing of print and audiovisual integration of print and speech in the initial phase of reading acquisition using multimodal neuroimaging. This presentation will provide novel insights into learning related alterations in cortical networks implicated in the visual processing of print and audiovisual integration of print and speech from the prereader to the reader.

- Monday 3rd February 2020 (PA28_126) : Dr **Barbara Tillmann** (Lyon Neuroscience Research Center, Auditory Cognition and Psychoacoustics Team)

Influence of rhythmic auditory stimulation on subsequent language processing

Abstract: Children with developmental language disorders have been shown to be impaired not only in language processing, but also in rhythm and meter perception. We tested the influence of external rhythmic auditory stimulation (i.e., musical rhythms) on syntax processing in children with specific language impairment and children and adults with dyslexia, using behavioral and electrophysiological measurements. Grammaticality judgments for auditorily presented (correct or incorrect) sentences were better after regular musical prime sequences than after irregular sequences or baseline sequences. In addition, the P600, an electrophysiological marker for processing grammatical errors, was enhanced after regular prime sequences. We also collected data for temporal processing in dyslexic adults and are now extending the investigation of a potential beneficial prime effect to other linguistic features. Our findings are interpreted within the Dynamic Attending Theory (Jones, 1976) and the Temporal Sampling (oscillatory) Framework for developmental language disorders (Goswami, 2011). They encourage the use of rhythmic structures (even in non-verbal materials) to boost linguistic structure processing and outline perspectives for rehabilitation.

- Monday 2nd March 2020 (M3341) : Prof **Marco Hessels** (University of Geneva, Metacognition-Dynamic Evaluation of Learning- Socio-Adaptive Skills and Inclusion & North-West University, Vanderbijlpark, Optentia Research Focus Area)

Improving reliability and validity of measures of cognitive functioning by means of dynamic assessments

Abstract: Since the time of Binet (1905) and the development of a multitude of intelligence (IQ-) tests that followed in the years after, cognitive assessment has largely been dominated by what we could call one-shot evaluations. I.e., a person's competences were, and still are, measured by means of a single evaluation and the outcome is considered to be both the best possible measure of these competences and the best predictor of future learning success.

Nevertheless, already in 1934, André Rey (1934, 2012) criticized such approaches because of completely ignoring the socio-cultural and educational backgrounds of the persons evaluated. Indeed, an abundance of research has shown that traditional intelligence tests are strongly biased measures of cognitive abilities with people from ethnic or cultural minorities as well as people with intellectual or learning disabilities. Not only may these measures largely underestimate actual competences, they also do not provide any information about learning possibilities. Researchers thus started to develop measures of learning potential, or dynamic testing. These tests include some kind of learning phase, in a pre-test – training – post-test format, by training-during-testing, or simply by providing training before testing. Such measures have shown to be more reliable and more valid than traditional IQ tests (e.g. Hessels, 1996). These tests better discriminate between learners and non-learners and better predict future learning (Hessels, 2009; Hessels & Hessels-Schlatter, 2010; Hessels-Schlatter, 2002; Tiekstra, Hessels & Minnaert, 2009). The preceding not only concerns general intellectual functioning, but also other cognitive domains. E.g., in her research project in which persons with intellectual disability were trained on working memory, Atia (2010) found that progress in working memory measures resulted from being able to manage and execute the task, rather than a real increase in working memory capacity. Also in the domain of language, static measures that examine children's prior knowledge in a particular domain may lead to incorrect diagnoses of primary language impairment. As a result, culturally or linguistically diverse preschoolers often are under-referred to special services, as any linguistic or literacy difficulties might be attributed to second language learning issues (Kapatzoglou, Restrepo, & Thompson, 2012; Maragkaki & Hessels, 2017). On the other hand, as these children's limited performance may not reflect their true potential, this may lead to over-referral to special services. A child's limited performance on standardized language assessments may be caused by factors, such as diverse learning experiences or lack thereof, which is often the case with children from linguistically diverse backgrounds. In this presentation I will illustrate the various measurement problems and how these may be avoided using dynamic measures of functioning.

- Monday 30th March 2020 (videoconference) : Assist. Prof. **Kathrin Rothermich** (East Carolina University, Department of Communication Sciences and Disorders)

How to make sense of the speech signal: acoustic and social-pragmatic processes

Abstract: Social communication is complex and rarely straightforward. Often listeners must infer what speakers mean, since what is said and what is meant often differ. Therefore, speakers and listeners must use linguistic strategies to facilitate the comprehension process. Additionally, cognitive abilities, personality characteristics, and contextual factors influence how we understand and interpret utterances. In my talk, I will present a series of studies that explore the uniquely human capacity to perceive and understand speech. In the first part, I will focus on experiments that study the influence of rhythmic cues on speech comprehension. In the second part, I will present studies dealing with the question of how we make sense of communicative intentions and the underlying social, cognitive, and neural mechanisms involved in this process.

To assist to videoconference, please write to: maryll.fournet@unige.ch

- Monday 18th May 2020 (videoconference): Dr **Raphaël Thézé** (University of Geneva, Auditory, Speech and Language Neuroscience)

The phase of cortical oscillations determines the perceptual fate of visual cues in naturalistic audiovisual speech

Abstract: when we see our interlocutor, our brain seamlessly extracts visual cues from their face and processes them along with the sound of their voice, making speech an intrinsically multimodal signal. Visual cues are especially important in noisy environments, when the auditory signal is less reliable. Neuronal oscillations might be involved in the cortical processing of audiovisual speech by selecting which sensory channel contributes more to perception. To test this, we designed computer-generated naturalistic audiovisual speech stimuli where one mismatched phoneme-viseme pair in a key word of sentences created bistable perception. Neurophysiological recordings (high-density scalp and intracranial EEG) revealed that the precise phase angle of theta-band oscillations in posterior temporal and occipital cortex of the right hemisphere was crucial to select whether the auditory or the visual speech cue drove perception. We demonstrate that the phase of cortical oscillations acts as an instrument for sensory selection in audiovisual speech processing.

To assist to videoconference, please follow the link: <https://unige.zoom.us/j/99608395279>