

LANGAGE ET COMMUNICATION

Enjeux et impacts sociétaux

3-4 septembre 2019

Campus Biotech

Livret des résumés

Book of abstracts

RÉSEAU THÉMATIQUE
LANGAGE & COMMUNICATION



UNIVERSITÉ
DE GENÈVE

Le Réseau Thématique Langage & Communication est né de l'initiative du rectorat en 2013, afin de rendre visibles les recherches au sein de l'Unige portant sur le langage et la communication. En 2015, huit projets ont été soutenus, regroupés en trois axes thématiques: neurosciences cognitives, discours et communication, linguistique théorique et informatique.

Inauguré en octobre 2015 avec la grande conférence de Stephen Anderson (*The place of human language in animal communication*), le Réseau Thématique Langage & Communication a organisé par la suite deux journées en septembre 2016 et 2017, permettant la mise en commun, par les présentations de chercheurs, des avancées des projets et des recherches dans le domaine.

Le colloque de clôture du Réseau Thématique Langage & Communication a pour ambition de faire le bilan des recherches sur le langage et la communication menées à l'Unige, mais sera aussi l'occasion unique de présenter au public académique et non académique de grands chercheurs travaillant sur le langage et/ou la communication: Dan Sperber (pragmatique, anthropologie cognitive), Simona Pekarek Doehler (linguistique interactionnelle), Philippe Ravaud (e-santé), Hagit Borer (syntaxe et sciences cognitives), Judit Gervain (neurosciences cognitives) et Klaus Zuberbühler (éthologie et cognition comparée).

3 SEPTEMBRE 2019 | AUDITORIUM H8-01, CAMPUS BIOTECH

9h **Ouverture**

Yves Flückiger (recteur), Jacques Moeschler (bureau L&C)

9h30 **What difference does ostension make to communication?**

What difference does language make to ostensive communication?

Dan Sperber (CNRS, Institut Jean Nicod, Paris & Central European University, Budapest)

10h30 **Pause café**

11h **Présentation des projets de recherche du Réseau thématique L&C**

12h **Déjeuner**

14h **Interactional competences of the youth: From school to the workplace**

Simona Pekarek Doehler (Université de Neuchâtel)

15h **SPIN et embellissement de la présentation des résultats en Médecine**

Philippe Ravaud (Université Paris Descartes & Mailman School of Public Health, Columbia University, New York)

16h **Pause café**

16h30 **The generative word**

Hagit Borer (Queen Mary University of London)

4 SEPTEMBRE 2019 | AUDITORIUM H8-01, CAMPUS BIOTECH

9h30 **Speech perception abilities at birth and beyond:**

how prenatal experience shapes speech perception and language development

Judit Gervain (INCC, CNRS & Université Paris Descartes)

10h30 **Pause café**

11h **Communications orales: 3 sessions parallèles**

(Auditorium H8-01, Salles H8-01-D (144.165) et H4-02-A, bâtiment H4, 2^e étage)

13h **Déjeuner-buffet et session poster**

(Campus Biotech, Hall H8)

15h **TBA**

Klaus Zuberbühler (Université de Neuchâtel)

16h **Table ronde de clôture**

Jean-Paul Bronckart, Luigi Rizzi, Éric Wehrli, Laurent Filliettaz, Jacques Moeschler

Inscription (gratuite mais obligatoire):

David.Blunier@unige.ch

Communications	2
Linguistique théorique et informatique	3
Discours, communication, didactique	10
Neurosciences	17
Posters	24

Langage et communication

Groupe de Pilotage : Jan Blanc, Henri Bounameaux, Christine Chappuis, Fernando Prieto-Ramos, Pascal Zesiger

Groupe opérationnel : Patrick Badillo, Laurent Filliettaz, Anne-Lise Giraud, Jacques Moeschler

Coordination : [David Blunier](#)
David.Blunier@unige.ch

lang-com.unige.ch

Conception graphique : Grégory Rorher, David Blunier

Communications

Talks

Mercredi 4 septembre, 11h-13h

Linguistique théorique et informatique Auditorium H8-01

Super-semantics and Super-Pragmatics for Affective Meaning

Constant Bonard

Causal connectives at the Discourse-Grammar Interface

Hasmik Jivanyan

Preventing undesirable thoughts in artificial intelligence

Alexandre Kabbach

Sentence embeddings and long-distance dependencies effects in French and English

Paola Merlo

Development of A Fully Automated Conversation Artificial Intelligence as Patient Decision Support System to Accompany Self-Management of Adults and Young Adults with Sickle-Cell Disease

David-Zacharie Issom, Kaveh Samii, Jessica Rochat, Gunnar Hartvigsen, Christian Lovis

Automatic translation of French medical text into SNOMED-CT

Christophe Gaudet-Blavignac, Vasiliki Foufi, Eric Wehrli, Christian Lovis

Discours, communication, didactique Salle H8-01-D

Favoriser l'intégration entre théorie et pratique par l'écriture chez les futurs enseignants?

Kristine Balslev et Sandra Pellanda Dieci

La fabrication des savoirs sur le langage en interaction : regards croisés sur les pratiques de la formation professionnelle des éducatrices de l'enfance

Laurent Filliettaz et Marianne Zogmal

Pratiques des enseignants en formation en classe de langue étrangère : leurs gestes didactiques et l'alternance des langues au service de la construction des savoirs

Slavka Pogranova

Analyser le travail dans les métiers d'éducation au prisme de la notion d'ostension

Marianne Zogmal

Communications Networks and Knowledge Management : the innovation potential of Social Media

Angela Bacchetta Beckh

L'information de santé francophone dans la presse et sur les médias sociaux : le cas de la prévention et du contrôle des infections

Karen Pelletier

Neurosciences Salle H4-02-A

Bilingualism and Cognition in children with Autism Spectrum Disorder

Stephanie Durrleman, Eleni Baldimtsi, Eleni Peristeri, Ianthi Tsimpli

Evidence for structural learning in a Lindenmayer grammar

Samuel Schmid, Diego Krivochen, Doug Saddy, Julie Franck

The sound of salience : how roughness enhances aversion through neural synchronization

Luc H. Arnal, Andreas Kleinschmidt, Laurent Spinelli, Anne-Lise Giraud, Pierre Mégevand

Characterizing Heschl's gyrus shape by a Multivariate Concavity Amplitude Index

Josué Luiz Dalboni da Rocha, Jan Benner, Peter Schneider, Narly Golestani

Cortical encoding of speech enhances task-relevant acoustic information

Sanne Rutten, Roberta Santoro, Alexis Hervais-Adelman, Elia Formisano, Narly Golestani

Linguistique théorique et informatique

Theoretical and computational Linguistics

Super-semantics and Super-Pragmatics for Affective Meaning

Constant Bonard, University of Geneva

To study precisely how meaning works among systems of signs such as dance, music, gestures, nonhuman communication, or pictorial representation, Philippe Schlenker (forthcoming) has proposed that we develop what he calls “super-semantics”, because regular truth-conditional semantics is not adapted to these systems. Since regular pragmatics (neo- or post-Gricean) also fail to fit how meaning is used in many instances of communication using these signs, a super-pragmatics also should be developed. In this presentation, I would like to make similar points regarding affective meaning, i.e. the information functionally carried by affective signs (e.g. facial, vocal, or bodily expression of emotions) :

1. Regular semantics is not adapted to affective meaning because the latter inherits its content from that of affects, a content which is not structured propositionally. By consequence, affective meaning cannot be accounted by a compositional, truth-conditional semantics.
2. Regular pragmatics is not adapted to affective meaning because affective communication usually doesn't work through the overt display of communicative intentions, which is a central assumption for regular (neo- or post-Gricean) pragmatics.
3. We can use data and theories developed in affective sciences as a strong basis to elaborate a super-semantics for affective meaning. In particular, even though affective content is not literally true or false, affects always involve a cognitive content which can be assessed as fit or unfit to the situation.
4. A super-pragmatics for affective meaning might be developed on the basis of such a super-semantics.

References Schlenker, P. (forthcoming). What is super semantics?. To appear in *Philosophical perspective*.

Causal connectives at the Discourse-Grammar Interface

Hasmik Jivanyan, University of Geneva

Subordination and coordination are issued from traditional grammar, but they are used in modern literature in a variety of (mutually related) senses and dimensions, such as at syntactic, semantic and discourse-pragmatic level (Bluhdorn 2008). Moreover, often they are used as parallel to another terminological pair, namely, hypotaxis and parataxis, such that hypotaxis refers to syntactic subordination, while parataxis is the coordination. The aim of this talk is to show that although these intuitions are often correct and there can be such parallels, the two terminological pairs do not denote the same phenomena, and they do not always match together : they can cross-cut and result in more than two cases than simply subordination = hypotaxis, coordination = parataxis. Our first goal is to show the distinction and the correlations between these two dimensions.

Second, Subordination implies some notions such as asymmetry or hierarchy, which have been clearly demonstrated and formalized in different theoretical (syntactic) models. Moreover, Subordination is often associated with heterogeneous communicative weight or prominence (salience, importance) of the clauses. This latter aspect is far from being explicitly and deeply investigated within any theoretical model, and my research aims at capturing these intuitions in a unified way.

The third and ultimate goal is to show how can different subordinated vs coordinated, as well as hypotactic vs. paratactic clauses be described in terms of discourse-level information structure

terms such as (not-)at-issueness. The latter captures the intuitions about clauses' prominence or importance within the model based on the notion of Question under Discussion (QUD, Roberts 1992).

The analyses will be based on, but not limited to, the examples of causal connectives (*parce que*, *puisque*, *car*) in French, mainly from newspaper corpus.

References

- Bluhdorn 2008 Subordination and coordination in syntax, semantics and discourse : Evidence from the study of connectives. In Fabricius-Hansen, Cathrine & Ramm, Wiebke (eds.), *'Subordination' versus 'Coordination' in Sentence and Text*. Amsterdam, Benjamins, 2008, pp. 59-85.
- Debaisieux J.-M. 2016 Toward a global approach to discourse uses of conjunctions in spoken French. *Language Sciences* 58 : 79-94.
- Horn 2015 Information Structure and the Landscape of (Non-)at-issue Meaning. In C. Féry, S. Ishihara (Eds.), *The Oxford Handbook of Information Structure*.
- Jivanyan H. & G. Samo 2018 *Parce que* in the syntax-semantics-pragmatics interface. *Generative grammar in Geneva* 10 : 77-99.
- Lambrecht K. & al. 2006 Cognitive constraints on assertion scope : the case of spoken French *parce que*. In Nishida C. & al. (Eds.), *New perspectives on Romance linguistics* 1 : 143-154.
- Roberts C. 2012/1996 Information structure in discourse : Towards an integrated theory of pragmatics. *Semantics and Pragmatics* 6 : 1-69.
- Schleppegrell M. J. 1991 Paratactic because. *Journal of Pragmatics* 16, 323-337.
- Sweetser E. 1990 *From etymology to pragmatics : metaphorical and cultural aspects of semantic structure*. CUP.
- Velleman L. & D. Beaver 2015 Question-based models of information structure. In C. Féry, S. Ishihara (Eds.), *The Oxford Handbook of Information Structure*. OUP : 86-107.

Preventing undesirable thoughts in artificial intelligence

Alexandre Kabbach, University of Geneva

Recent work on (artificial) cognition and communication has argued that any artificial intelligence fully capable of processing natural language is bound to disagree with and/or misunderstand any given (human) speaker at some point (Kabbach, 2019).

If disagreement over things such as predicates of personal taste (e.g. 'fun' or 'tasty') may be acceptable from an ethical standpoint, can the same be said of disagreement over moral issues? And if such things exist as undesirable thoughts, can we constrain artificial cognition to render such thoughts unlikely—if not impossible—while not hindering proper understanding of human language?

In this talk we discuss two possible forms of constraints over artifi-

cial conceptual spaces (1) the reduction of the set of initial primitives that renders certain concepts inaccessible and creates *de facto* 'unthinkable thoughts'; and (2) the bias of the composition function that alters the likelihood of certain conceptual composition operations.

We argue that none of those options provide complete guarantees over so called 'undesirable thoughts', in that a machine fully able to process natural language may find compensating mechanisms to generate and propagate undesirable concepts in either case.

We conclude that only 'artificial education', in the form of systematic exposure to a set of controlled stimuli, can provide a satisfactory form of constraint over the artificial conceptual apparatus.

Sentence embeddings and long-distance dependencies effects in French and English

Paola Merlo, University of Geneva

Recent interest in recursive neural networks (RNNs) has spurred detailed investigations whether the distributed representations they generate exhibit properties similar to those characterising human languages [1]. We ask whether sentence embeddings calculated by RNNs match human acceptability judgments in long-distance dependencies (see examples 1-4). To preview, sentence embeddings do not unequivocally encode fine-grained linguistic properties of long-distance dependencies. Long-distance dependencies are not all equally acceptable or even grammatical (for example, sentences (3a,b) and (4a,b) are not fully grammatical). A prominent explanation says that a long-distance dependency acceptability depends on their morpho-syntactic properties [3, 2, 4] : lexical restriction, number and animacy. French stimuli [2, 4] and their English equivalents were transformed into sentence embeddings (BoVfastText) and classified with a multi-layer perceptron into the four sentence types (1a,b, 2a,b and 3a,b, 4a,b). Classification accuracy is the dependent variable. Weak islands results : for French, only the prediction on the effect of animacy in the lexically specified case is confirmed; for English,

the prediction for the effect of animacy is confirmed both in bare wh-phrases and in lexicalised wh-phrases. For object relative clauses, none of the predictions in the non-control cases are confirmed, either in French or in English.

(1a,b) Julie smiles to the student/students that the speaker has been seriously annoying from the start.

(2a,b) Julie points out to the student/students that the speaker has been yawning frequently from the start.

(3a,b) Which class/which professor do you wonder which student liked?

(4a,b) What/who do you wonder who liked?

References

[1] Belinkov and Glass. Analysis methods in neural language processing : A survey. TACL, 7 :49–72, 2019. [2] Franck et al. Task-dependency and structure dependency in number interference effects in sentence comprehension. Frontiers in Psychology, 6, 2015. [3] Rizzi. Locality and left periphery. In Belletti, The cartography of syntactic structures, 223–251. OUP, 2004. [4] Villata and Franck. Semantic similarity effects on weak islands acceptability. In 41st ICG, 2016.

Development of A Fully Automated Conversation Artificial Intelligence as Patient Decision Support System to Accompany Self-Management of Adults and Young Adults with Sickle-Cell Disease

David-Zacharie Issom^a, Kaveh Samii^b, Jessica Rochat^a, Gunnar Hartvigsen^c,
Christian Lovis^a

^aDivision of Medical Information Sciences, Geneva University Hospitals & University of Geneva, Switzerland; ^bDepartment of Haematology, University Hospital Geneva, Switzerland; ^cDepartment of Computer Science, University of Tromsø – The Arctic University of Norway, Norway

Sickle cell disease (SCD) is the world's most common genetic disorder. Nevertheless, SCD remains underprioritized and poorly resourced. Facing a lack of providers and care coordination, the adult population is left to self-manage. To date, there are no Digital Health Interventions (DHI) supporting the comprehensive self-management needs of adults with SCD. Moreover, little is known about their preferred features (e.g. medication reminder, self-monitoring). We developed and ran a survey on self-management needs, day-to-day challenges and app features preferences. Adult patients were recruited through convenience sampling. Thirty-three patients completed the survey. To collect more detailed information, we conducted three focus groups with four patients. Participants clearly demonstrated an interest in DHIs. They asked for DHIs that adjunct to usual care

and integrate with existing health information repositories. The most recurrent requests were assistance for self-monitoring, avoiding symptoms, sharing data with emergency departments, receive medical information and medical advices remotely. Patients also asked for DHIs providing trustworthy information wrapped in a simple design. Finally, they prioritized features and co-designed a chatbot prototype. Future steps will be to evaluate the prototype's usability. Today, DHIs for adults with SCD are far from comprehensive. Our findings suggest that patients' experiential knowledge can be translated into explicit demands. Our participatory approach allowed to better understand what patients want from DHIs and what these could look like. Involving patients in all development phases can result in highly engaging DHIs that positively impact health outcomes.

Automatic translation of French medical text into SNOMED-CT

Christophe Gaudet-Blavignac, Vasiliki Foufi, Eric Wehrli, Christian Lovis^a

^aUniversity of Geneva

Interoperability is crucial for effective sharing and reuse of clinical data. More specifically, semantic interoperability is required for applications such as quality control, decision support and research. Initiatives to support interoperability in Electronic Health Record (EHR) already exist such as the Meaningful Use Program [1] in the United States, or the work of HL7 to define technical specifications for sharing medical documents [2]. However a major part of data in EHR are still in free text and reside in narrative documents such as admission notes and discharge letters. From the semantic aspect, SNOMED International publishes and maintains the Systematized Nomenclature of Medicine – Clinical Terms (SNOMED CT)[3], in the aim of providing a unified semantic resource that can be used to represent any medical concept. SNOMED CT concepts can be combined using a compositional grammar to create post-coordinated sentences. This feature allows the representation of the medical language into the formal language of SNOMED CT. To move towards seman-

tic interoperability, a method to automatically translate French medical sentences in SNOMED CT post-coordinated sentences is presented. To perform this translation, a Natural Language Processing (NLP) tool has been adapted, lexico-semantic resources were created and post-coordination rules were implemented. Automatic annotation and post-coordination of concepts has been evaluated by manual validation of a sample of 1500 concepts with a precision of 85% and 71.2% for simple and post-coordinated concepts respectively.

References [1] C. Group, « What is the HITECH ACT? | What HITECH Compliance Means », Compliancy Group. [En ligne]. Disponible sur : <https://compliancy-group.com/what-is-the-hitech-act/>. [Consulté le : 12-juin-2019]. [2] « Health Level Seven International - Homepage | HL7 International ». [En ligne]. Disponible sur : <https://www.hl7.org/>. [Consulté le : 12-juin-2019]. [3] SNOMED, « SNOMED International », 2006. [En ligne]. Disponible sur : <https://www.snomed.org/news-articles/snomed-ct-compositional-grammar-specification-and-guide>. [Consulté le : 06-nov-2017].

Discours, communication, didactique

Discourse, communication, didactics

Favoriser l'intégration entre théorie et pratique par l'écriture chez les futurs enseignants ?

Kristine Balslev et Sandra Pellanda Dieci, Université de Genève

Les écrits demandés aux étudiants lors de leur formation universitaire sont multiples : résumés de texte, notes de synthèse, rapports de recherche, dissertations, récits d'expérience, analyses de pratiques, mémoires, etc. Ces écrits ont des visées formatives variées : l'appropriation par les étudiants de concepts et modèles théoriques, la capacité de restituer une démarche scientifique, la sensibilisation aux règles de la communication scientifique et la description et l'objectivation d'expériences professionnelles et, enfin, l'intégration entre éléments théoriques et éléments dits pratiques de la formation. Cette dernière visée est au cœur de cette communication. Que font les étudiants lorsque l'on leur demande de partir de leurs propres expériences ou préoccupations puis de les examiner à l'aune de la théorie ? Nous nous intéressons particulièrement aux travaux universitaires dans les formations en alternance impliquant des récits d'expériences, tout en visant l'appropriation de savoirs scientifiques de référence pour professionnaliser le formé, et s'inscrivant dans un « genre réflexif » académique (Vanhulle, 2016). A partir de l'analyse de « Dossiers de dévelop-

pement professionnel » produits dans le cadre de la formation à l'enseignement secondaire par des enseignants-étudiants universitaires, nous analyserons les différentes façons d'introduire les références scientifiques et leurs rôles dans la présentation et la compréhension d'une situation relatée. Nous étudierons également le positionnement énonciatif présent dans ces textes en distinguant deux positionnements : le premier, épistémique, dans lequel l'auteur avance des idées et les discute « dans une prise en charge à visée universalisante » (Boch, 2013) sans mentionner sa personne physique et sociale et le second, déictique, où l'auteur s'exprime en JE en relatant ses expériences et sa subjectivité. Nos premières analyses font émerger six manières de faire usage de la théorie dans ces textes et différentes façons de passer du « je épistémique » au « je déictique ». Cette présentation sera l'occasion de mettre à l'épreuve ces six catégories. Une réflexion sur le sens à demander aux futurs professionnels de « mobiliser la théorie » conclura cette présentation en évoquant les pratiques, les obstacles que cette demande suscite et les moyens pour les dépasser.

La fabrication des savoirs sur le langage en interaction : regards croisés sur les pratiques de la formation professionnelle des éducatrices de l'enfance

Laurent Filliettaz et Marianne Zogmal, Université de Genève

Le champ de la formation professionnelle initiale et continue constitue un espace de médiation et de production de savoirs, qui est à même de renouveler et de vivifier les relations entre la recherche et les champs de pratiques sociales. Ces réalités concernent aussi de manière plus spécifique les « savoirs sur le langage » et la manière dont la « part langagière du travail » peut devenir un objet de rencontre entre des chercheurs en linguistiques et des professionnels, qui, au quotidien, travaillent avec le langage (Boutet, 2001, 2008 ; Filliettaz, 2006). Contribuer à la formation et au développement professionnel des travailleurs aux prises avec l'usage du langage peut ainsi s'avérer un espace de médiation particulièrement productif pour non plus seulement « restituer » ou « diffuser » des savoirs savants sur le langage, mais pour les élaborer conjointement avec les professionnels eux-mêmes. Telles sont quelques-unes des idées générales que nous proposons de présenter et d'illustrer dans cette communication. Dans cette contribution, nous proposons de centrer notre attention sur la manière dont un dispositif de recherche que nous avons mis en place a pu constituer une opportunité pour les professionnelles de l'éducation de l'enfance de rendre visibles

les savoirs d'expérience dont elles disposent sur le rôle des interactions langagières dans leur travail auprès des enfants et auprès des stagiaires qu'elles encadrent occasionnellement. Nous nous focalisons en particulier sur les représentations en circulation dans leurs discours à propos de la place et du rôle de l'interaction verbale dans la construction d'une posture professionnelle et la manière dont les catégories utilisées à ce propos émergent au fil de la rencontre entre des chercheurs et des collectifs d'éducatrices. Pour ce faire, nous commençons par rappeler les objectifs généraux de la démarche de recherche adoptée et les quelques principes à la fois théoriques et méthodologiques qui ont orienté notre approche. Nous proposons ensuite de soumettre à l'analyse deux entretiens conduits entre notre équipe de recherche et des professionnelles de l'éducation de l'enfance et de la formation professionnelle dans ce domaine. Cette analyse a pour but de mettre en évidence la manière dont se fabriquent des savoirs sur le langage en interaction entre chercheurs et praticiens. Dans une partie conclusive, nous discutons de la nature des savoirs produits et des conditions discursives dans lesquels ils sont rendus visibles.

Pratiques des enseignants en formation en classe de langue étrangère : leurs gestes didactiques et l'alternance des langues au service de la construction des savoirs

Slavka Pogranova, Université de Genève

Cette contribution propose d'analyser la construction des savoirs en classe de langue à l'école primaire genevoise, notamment au moyen des gestes didactiques des enseignants et la méso-alternance. À partir d'un corpus de 15 leçons données par des futurs enseignants d'allemand et d'anglais, nous présentons les caractéristiques des gestes (Schneuwly & Dolz, 2009) et leur rôle dans la construction et la transformation des savoirs. Dans un deuxième temps, nous nous interrogeons sur la méso-alternance (Gajo, Grobet, & Steffen, 2015 ; Gajo & Steffen, 2015) comme pratique langagière des enseignants à des fins didactiques. Dans un troisième temps, nous analysons quelques extraits, montrant leurs particularités.

Nous nous basons sur le synopsis (Sales Cordeiro, Ronveaux, & équipe GRAFE, 2009) et le logiciel d'analyse qualitative N Vivo 10. La contribution

propose quelques réflexions menant à la compréhension de la communication en classe, renvoyant aux dispositifs de formation initiale, un des enjeux sociétaux.

Références

Gajo, L., Grobet, A., & Steffen, G. (2015). Saisir le niveau méso-interactionnel dans l'interaction didactique : autour des notions de saturation et de méso-alternance. *Bulletin suisse de linguistique appliquée*, 101, 27-49.

Gajo, L., & Steffen, G. (2015). Didactique du plurilinguisme et alternance de codes : le cas de l'enseignement bilingue précoce. *The Canadian Modern Languages Review*, 71(4), 471-499.

Sales Cordeiro, G., Ronveaux, C., & équipe GRAFE. (2009). Le recueil et le traitement des données. In B. Schneuwly & J. Dolz (Eds.), *Des objets enseignés en classe de français* (pp. 83-100). Rennes : Presses universitaires de France.

Schneuwly, B., & Dolz, J. (2009). *Des objets enseignés en classe de français : le travail de l'enseignant sur la rédaction de textes argumentatifs et sur la subordonnée relative*. Rennes : Presses universitaires de Rennes.

Analyser le travail dans les métiers d'éducation au prisme de la notion d'ostension

Marianne Zogmal, Université de Genève

Dans les métiers de la prise en charge d'autrui, les pratiques professionnelles se déploient dans et à travers le langage. Une analyse des phénomènes langagiers, et plus largement interactionnels, constitue ainsi une entrée pour mieux comprendre les spécificités et les enjeux d'un contexte professionnel. A travers un exemple empirique issu du champ de l'éducation de l'enfance, cette contribution aborde les processus qui permettent aux professionnelles et aux enfants d'attribuer des significations aux énoncés et aux conduites interactionnelles des participants. Les interactions avec de jeunes enfants, qui sont encore en train d'acquérir l'accès au langage verbal, rendent visibles comment les phénomènes d'ostension s'inscrivent dans la séquentialité du déroulement interactionnel (Sperber & Wilson, 1989). Le travail d'interprétation inférentielle consiste à chercher de comprendre le vouloir-dire d'un interactant. Les significations attribuées peuvent ensuite être rendues mutuellement manifestes et partageables dans le contexte local de l'interaction. Elles constituent alors des hypothèses de compréhén-

sion qui peuvent s'insérer dans un travail d'enquête afin de construire des significations partagées par l'ensemble des interactants. Les données empiriques, consistant en des interactions filmées et transcrites dans une perspective multimodale (Kress et al., 2001) montrent que l'ostension des compréhensions élaborées porte parfois sur la surface linguistique des énoncés, mais surtout sur leur dimension pragmatique. Dans un collectif de travail, les praticiens rendent également manifestes leurs observations portant sur les compétences des enfants, et notamment les compétences langagières. Ces phénomènes langagiers et interactionnels sont fugitifs et imbriqués dans le déroulement des interactions multimodales. Leur mise en visibilité à travers une analyse fine des interactions permet de contribuer à une description des pratiques professionnelles réalisées et à identifier les compétences interactionnelles déployées. Par ailleurs, une telle démarche d'analyse transpose l'usage de la notion d'ostension en tant que catégorie d'analyse pour étudier des contextes professionnels réels, en prise avec des questions sociales actuelles.

Communications Networks and Knowledge Management : the innovation potential of Social Media

Angela Bacchetta Beckh, University of Geneva

The purpose of this research is to examine the relationship between information and knowledge created by Social Media and related knowledge management for innovation purposes. Knowledge and knowledge management happens within social constructs which illustrates the importance of the social aspects within social media's impact for transforming data into knowledge and related epistemological rupture.

Method. Literature review and chronological approach combined with an analysis of over 1000 quantitative survey results on social media's perceived usefulness for innovation purposes by senior practitioners and innovation professionals as well as over 100 qualitative surveys.

Results. The findings illustrate social media's impact on the innovation process as these knowledge networks create a new form of information and knowledge. These findings are discussed within the context of the digital revolution and new forms of communications and knowledge management. The innovation potential of these digi-

tal communication networks are closely linked to the digital maturity of enterprises/organizations as well as the digital work identity of knowledge workers. Studying the innovation potential of social media also contributes to some of the key questions that the future of this digital revolution holds, especially the future of work and related innovation ecosystems.

Research limits/implications. This study analyses the perceived usefulness concerning social media and stronger use for innovation purposes. However even more quantitative data could confirm the observations in relationship to innovation and social media, especially in less researched regions.

Practical implications. The work can encourage policy makers, innovation professionals and HR managers to leverage social media to foster innovation.

Originality/value. The connections between social media, innovation, diversity and discourse have so far been under-researched. This work pinpoints the opportunities of social media as innovation communications networks.

L'information de santé francophone dans la presse et sur les médias sociaux : le cas de la prévention et du contrôle des infections

Karen Pelletier, Université de Genève

Introduction. L'analyse quantitative de la presse et des médias sociaux dans le domaine de la prévention et du contrôle des infections prend en compte des critères temporels, langagiers et géographiques. Au niveau temporel, l'analyse de la presse mesure l'évolution des publications de 2010 à 2017. L'analyse des médias sociaux mesure les publications réalisées sur une année, comprise entre 2017 et 2018. Au niveau langagier, l'étude se focalise sur le contexte francophone. Au niveau géographique, elle se centre sur la France et la Suisse Romande, le Maghreb ainsi que sur les pays francophones du reste de l'Afrique.

Méthodes. L'analyse de la presse s'appuie sur la base de données Nexis qui regroupe plus de 36'000 sources de presses internationales. L'analyse des médias sociaux est effectuée à l'aide de l'outil de social listening, Search. A l'aide de ces deux outils, les statistiques sur la présence des mots-clés : santé et pré-

vention, prévention et infection, infection, épidémie, santé publique, sont recueillis.

Résultats. Dans la presse, en comparant les résultats des régions francophones du Nord à celles du Sud, nous observons que le nombre d'articles consacrés à la santé, la prévention ainsi que la prévention des infections, est de l'ordre de 3,5 fois plus faible pour le Maghreb que pour la France, et près de 5 fois plus faible pour le reste de l'Afrique francophone que pour la France. Sur les médias sociaux, en plus de cette fracture informationnelle forte, nous observons une disparité notable dans l'usage des médias sociaux concernant la diffusion de l'information de santé.

Conclusion. Cette recherche a permis de démontrer l'existence d'une fracture informationnelle forte dans le domaine de la santé publique du monde francophone.

Neurosciences

Bilingualism and Cognition in children with Autism Spectrum Disorder

Stephanie Durrleman, Eleni Baldimtsi, Eleni Peristeri, Ianthi Tsimpli

Executive functions (EF) have been claimed to influence Theory of Mind (ToM) in both typically developing children (TD) and those with Autism Spectrum Disorders (ASD) [1,2]. Weaknesses in EF and ToM are associated with ASD [2–5]. Bilingualism arguably boosts EF [6] and ToM [7–8] in TD children and may modulate EF in children with ASD according to preliminary findings [9], however it is still unknown if bilingualism improves ToM in ASD and if such improvement would relate to EF.

Method. Sixty-eight children with ASD participated : 34 bilinguals (ASDbi) (Mean age : 11;7) and 34 monolinguals (ASDmono), matched on age (Mean age : 11;7) and nonverbal intelligence (Range 73–120) [10]. Bilinguals were balanced Albanian–Greek speakers. ToM was measured via an online, non-verbal false-belief task [11], and EF via both a non-verbal task of attentional control (attending at the global or local level in congruent and incongruent trials) [12] and a 2 digits-back Working memory (WM) task. Accuracy and reaction times were recorded.

Results. ASDbi children were more accurate at focusing attention on the global level than ASDmono ($p < .04$). ASDbi exhibited higher accuracy than monolinguals in the 2-back task ($p < .02$). ASDbi were more accurate than ASDmono on ToM ($p < .001$), while there were no significant RT differences between groups ($p = .599$). Regression analyses showed that accuracy of ASDbi on ToM increased with accuracy on the 2-back task ($\text{Beta} = .476$, $p = .01$). ToM in ASDmono did not interact with any EF measure.

Discussion. Bilingualism boosts ToM

and EF in ASD. A stronger relationship emerged between WM and ToM in bilingual children with ASD, in contrast to ASDmono children whose ToM performance did not seem to draw on either WM or attention. The overall findings suggest that ToM in bilinguals and monolinguals with ASD draws on different resources and highlight advantages for ASDbi children over ASDmono for EF and ToM.

Appendix
Table 1

Group	Experimental tasks				
	Global Accuracy (%)	Local Accuracy (%)	2-back task Accuracy (%)	Non-verbal ToM task accuracy (%)	Non-verbal ToM task RTs (in msecs)
TD monolingual children	91.8 (13.7)	90.8 (12.0)	23.1 (13.3)	77.2 (11.3)	2269 (591.4)
TD bilingual children	94.4 (7.6)	91.2 (10.5)	32.3 (15.4)	77.3 (11.7)	2272 (574.5)
Monolingual children with ASD	84.5 (18.2)	90.4 (12.4)	25.2 (15.8)	45.6 (16.9)	2129 (734.1)
Bilingual children with ASD	90.1 (16.3)	82.6 (19.6)	34.1 (12.2)	76.4 (8.4)	2565 (730.2)

References [1] Flynn, E. (2007). The Role of Inhibitory Control in False-Belief Understanding. *Infant and Child Development* 16, 53 – 69. [2] Pellicano, E. (2007). Links between theory of mind and executive function in young children with autism : Clues to developmental primacy. *Developmental Psychology*, 43 (4), 974–990. [3] Pennington, B.F., Rogers, S.J., Bennetto, L., Griffith, E.M., Reed, D.T., & Shyu, V. (1997). Validity tests of the executive dysfunction hypothesis of autism. In J. Russell (Ed.), *Autism as an executive disorder* (pp. 143–178). Oxford : Oxford University Press. [4] Pellicano, E. (2010). Individual differences in executive function and central coherence predict developmental changes in theory of mind in autism. *Developmental Psychology*, 46, 530–544. doi :10.1037/a0018287 [5] Ozonoff, S., & Jensen, J. (1999). Specific executive function profiles in three neurodevelopmental disorders. *Journal of Autism and Developmental Disorders*, 29 (2), 171–177. [6] Bialystok, E. (2010). *Bilingualism*. Wiley interdisciplinary reviews : Cognitive science, 1 (4), 559–572 [7] Diaz, V. & Farrar, M. J. (2017). The missing explanation of the false-belief advantage in bilingual children : a longitudinal study. *Developmental Science*, <https://doi.org/10.1111/desc.12594> [8] Nguyen,

- T.K., & Astington, J.W. (2014). Reassessing the bilingual advantage in theory of mind and its cognitive underpinnings. *Bilingualism : Language and Cognition*, 17, 396–409. [9] Gonzalez-Barrero, A. M., & Nadig, A. S. (2017). Can Bilingualism Mitigate Set-Shifting Difficulties in Children With Autism Spectrum Disorders? *Child Development*, <https://doi.org/10.1111/cdev.12979> [10] Georgas, J., Paraskevopoulos, I., Besevegis, E., & Giannitsas, N. (1998). Greek Wechsler Intelligence Scale for Children. WISC-III : Manual. Athens : Ellinika Grammata. [11] Forgeot d’Arc, B., & Ramus, F. (2011). Belief attribution despite verbal interference. *Quarterly Journal of Experimental Psychology*, 64, 975–990. [12] Navon, D. (1977). Forest Before Trees : The Precedence of global features in visual perception. *Cognitive Psychology*, 9 (3), 353–383.

Evidence for structural learning in a Lindenmayer grammar

S. Schmid^a, D. Krivochen^b, D. Saddy^b, J. Franck^a

^aUniversity of Geneva; ^bUniversity of Reading, UK

Our research investigates if the human parser is sensitive to the underlying structure governing the simplest Lindenmayer grammar [1] consisting of two rewrite rules : 01, 101. This grammar is called Fibonacci (Fib) because at each generation the number of symbols (0s and 1s) follows the Fibonacci sequence (0, 1, 1, 2, 3, 5, 8,...). The analysis of the formal properties of Fib-generated strings shows that whereas some symbols are fully ambiguous and thus cannot be linearly anticipated, others (called k-points) can be predicted if the parser relies on the hierarchical structure of this grammar [2]. In three experiments we explored whether humans are able to learn Fib and more particularly to track kpoints. We used a serial reaction time paradigm in which participants had to press as quickly as possible the button corresponding to the symbol on the screen. In experiment 1, participants learned the Fib grammar. The learning slope of k-points was significantly steeper than that of ambiguous symbols. However, since k-points were more frequent than ambiguous symbols, this advantage may reflect the tracking of surface statistical regularities rather

than structural learning. Experiment 2 used the Skip grammar (001; 101101) in which the statistical distribution of k-points was reversed such that they were less frequent than ambiguous symbols. The learning slopes were reversed, showing a significant advantage for ambiguous symbols. Experiment 3 tested how participants switch from learning one grammar in the first part of the experiment (Fib or Skip) to learning the other grammar in the second part. Different curves were observed for the two groups, suggesting that unlearning Fib is more difficult than unlearning Skip. This finding suggests that the advantage for k-points in Experiment 1 cannot be attributed only to the tracking of surface statistics, and that the parser extracts, to some extent, the underlying structure of the grammar.

References [1] Lindenmayer, A. (1968). Mathematical models for cellular interactions in development II. Simple and branching filaments with two-sided inputs. *Journal of Theoretical Biology*, 18, 300–315. doi :10.1016/0022-5193(68)90080-5 [2] Krivochen, D., Phillips, B., & Saddy, D. (2018). Classifying points in Lindenmayer systems : Transition probabilities and structure reconstruction [Unpublished work]. University of Reading. doi :10.13140/RG.2.2.25719.88484

The sound of salience : how roughness enhances aversion through neural synchronization

Luc H. Arnal^a, Andreas Kleinschmidt^b, Laurent Spinelli^b, Anne-Lise Giraud^a, Pierre Mégevand^{a,b}

^aDepartment of Fundamental Neuroscience, University of Geneva; ^bDepartment of Clinical Neuroscience; University of Geneva.

Being able to produce sounds that capture attention and elicit rapid reactions is the prime goal of communication. One strategy, exploited by alarm signals, consists in emitting fast but perceptible amplitude modulations in the roughness range (30–150 Hz). Here, we investigate the perceptual and neural mechanisms underlying aversion to such salient sounds. By measuring subjective aversion to repetitive acoustic transients, we identify a non-linear pattern of aversion restricted to the roughness range. Using intracranial recordings, we show that rough sounds do

not merely affect local auditory processes but instead synchronise large-scale, supramodal, salience-related networks in a steady-state, sustained manner. More specifically, rough sounds synchronise activity throughout superior temporal regions, subcortical and cortical limbic areas, and the frontal cortex, a network classically involved in aversion processing. This pattern correlates with subjective aversion in all these regions, consistent with the hypothesis that roughness enhances auditory aversion through the spreading of neural synchronisation.

Characterizing Heschl's gyrus shape by a Multivariate Concavity Amplitude Index

Josué Luiz Dalboni da Rocha^a, Jan Benner^b, Peter Schneider^b, and Narly Golestani^a

^aBrain and Language Lab, Department of Psychology, University of Geneva; ^bDepartment of Neuroradiology, University of Heidelberg Medical School, Heidelberg, Germany.

Heschl's gyrus (HG), which includes primary auditory cortex, displays considerable variation in size and shape across individuals and hemispheres. The most common gyrification patterns include single HG, common stem duplications (CSD) and complete posterior duplications (CPD). To date, characterization of HG gyrification patterns has been based on the visual identification of possible existing sulci, and reproducible criteria for defining sulci have not been established. Techniques for segmenting the HG already exist, such as TASH and Freesurfer. However, there is no continuous measure for specifically assessing the shape of HG. Here, we present a fully automated novel method called Multivariate Concavity Amplitude Index (MCAI) for characterizing the shape of HG. MCAI uses continuous indices of the concavity (i.e. inward displacements) of different parts HG, taking into account the direction of the displacement (e.g. anterior, posterior, medial or lateral). We applied MCAI to the right HG, extracted using TASH, from the brain structu-

ral data of 182 healthy adult participants including professional and amateur musicians, as well as non-musicians. We found that the dominant lateral concavity, likely corresponding to sulci arising laterally, is significantly more prominent than the dominant concavity in any other orientation [$t(181)=6.586$, $p<0.001$], suggesting that MCAI is suitable for automatically assessing the likelihood of sulci being present. Additionally, as expected based on previous findings showing a higher likelihood of greater gyrification of HG in musicians compared to non-musicians, we find that the dominant lateral concavity amplitude index is significantly higher in the former compared to the latter group [$t(181)=3.316$, $p=0.001$, 2-tailed]. MCAI allows the application of automated and reproducible criteria for characterizing the shape of the HG using continuous indices. Next steps will involve application of MCAI to large datasets in the context of auditory and linguistic expertise, disease and genetic variation.

Cortical encoding of speech enhances task-relevant acoustic information

Sanne Rutten, Roberta Santoro, Alexis Hervais-Adelman, Elia Formisano & Narly Golestani^a

^aBrain and Language Lab, Department of Psychology, University of Geneva

Speech is the most important signal in our auditory environment, and its processing is highly context-dependent¹. However, it is unknown how contextual demands influence the neural representations of the acoustic content of speech (henceforth referred to as “speech sound encoding”). Here, we examined the task-dependence of auditory cortical mechanisms for speech encoding using model-based decoding² of 7T functional magnetic resonance imaging data. Participants performed a phoneme identification or a speaker identification task on the same speech sounds (pseudo-words), and we examined how this influenced speech encoding at the level of the representation of fundamental acoustic features (spectro-temporal modulations). We found that performing different tasks on identical speech sounds leads to the neural enhancement of the acoustic features in the stimuli that are critically relevant for task performance. Acoustic analysis of the speech sounds showed that speaker information in the speech signal is characterized by modulation at higher

spectral modulations. Accordingly, during the speaker task, the neural encoding of these sound features was amplified. Conversely, phonetic information in the stimuli was characterized by lower spectral modulations and by faster temporal modulations, and this was paralleled by amplification in the neural encoding of corresponding sound features during the phoneme task. These task effects were observed already within Heschl’s gyrus, which is the earliest auditory cortical processing stage. Moreover, these findings are in line with interactive accounts of speech processing. Our work provides important insights into the mechanisms underlying the processing of contextually relevant acoustic information within our rich and dynamic auditory environment.

References [1] Leonard, M. K. & Chang, E. F. Dynamic speech representations in the human temporal lobe. *Trends Cogn Sci* 18, 472–479, doi :10.1016/j.tics.2014.05.001 (2014). [2] Santoro, R. et al. Reconstructing the spectrotemporal modulations of real-life sounds from fMRI response patterns. *Proc Natl Acad Sci U S A* 114, 4799–4804, doi :10.1073/pnas.1617622114 (2017).

Posters

Is dog cortical entrainment affected by speech rate and type? A comparison with human processing

Eloïse C. Déaux^a, Florence Gaunet^b, Thierry Legou^c, Julie Mathieu-Sarrat^b and Anne-Lise Giraud^a

^aDepartment of Fundamental Neurosciences, University of Geneva; ^bLaboratoire de Psychologie Cognitive, CNRS & AMU, UMR 7290, Marseille, France; ^cLaboratoire Parole & Langage, CNRS & AMU, Aix-en-Provence, France

Processing speech requires segmenting a continuous acoustic flow into building blocks that connect with stored linguistic representations. Our auditory cortex is able to track structures in speech using the rhythmicity of neuronal ensembles, which tend to fire in synchrony, in bilaterally distributed but functionally lateralized cortical systems. Speech comprehension fails when speech rate is compressed beyond its natural range and this effect is correlated with decreased coherence between the speech envelope and cortical oscillation [1]. However, even in low-intelligibility conditions, theta phase locking remains, suggesting it to be a core aspect of speech processing [2].

Dogs are phylogenetically distant from humans, yet our long coevolutionary history has likely favored their unusual ability to perceive and respond to human signals [3]. They can learn >1000 words naming objects, treating them as verbal referents, and dog speech processing appears to exhibit functional lateralization analogous to ours [4,5]. Des-

pite these striking similarities with humans, we do not know how dogs process speech.

In this first study, we aim to assess whether human speech entrains dogs' cortical oscillations. As theta entrainment is thought to be necessary, albeit not sufficient for speech comprehension, we will investigate whether dogs' cortical oscillations in the theta range entrain to speech and whether this entrainment is influenced by speech rate and correlates with lexical measures and speech familiarity. Understanding whether and how dogs track and syllabify continuous speech and where the bottleneck for speech comprehension lies will ultimately help us inform our models of human linguistic communication evolution. We present the current state of the development of the project.

References. [1] Ahissar et al. 2001. PNAS. 98 :13367-13372 [2] Pefkou et al. 2017. J Neurosci. 37 :7930-7938 [3] Hare & Tomasello. 2005. TCS. 9 :439-444 [4] Bloom. 2004. Science 304 :1605-1606 [5] Andics et al. 2016. Science. 353 :1030-1032

L'identification et le développement des compétences interactionnelles en formation professionnelle continue : le cas de la communication directe et indirecte entre parents et éducatrices de l'enfance

Stéphanie Garcia, Université de Genève

Notre contribution s'appuie sur un travail de thèse en cours de réalisation s'intéressant à l'activité de travail et au développement professionnel des éducatrices de l'enfance dans les relations avec les parents. L'abondante littérature sur les difficultés que rencontrent les professionnelles dans l'établissement de relations prescrites comme partenariales avec les parents, reflète 1) le besoin de mieux comprendre la mise en œuvre de cette relation et les *compétences interactionnelles* spécifiques mobilisées; 2) l'intérêt de développer un dispositif de formation continue qui permet de soutenir et de développer l'activité des professionnelles.

Cette recherche s'inscrit dans le champ de la linguistique interactionnelle en analyse du travail (Filliettaz, de Saint-Georges & Duc, 2008; Filliettaz, 2014). Sa double finalité est pensée de manière imbriquée dans un dispositif de recherche-intervention. Des professionnelles outillées et formées à l'analyse des interactions multimodales élaborent avec les chercheurs le sens attribué à leurs propres pratiques. Permet-

tant de rendre visible une certaine facette de l'activité des éducatrices, l'analyse des interactions est dès lors pensée comme un levier possible pour le développement professionnel.

Dans la contribution prévue, nous nous intéresserons plus particulièrement au phénomène interactionnel de la communication directe et indirecte entre les participants aux situations d'accueil et de départ des enfants en crèches. Comment les éducatrices et les chercheurs s'orientent-ils vers l'identification d'un tel phénomène? Et en quoi renseigne-t-il l'activité des professionnelles et les compétences interactionnelles mises en œuvre à cette occasion?

Références Filliettaz, L. (2014a). L'interaction langagière : un objet et une méthode d'analyse en formation d'adultes. In J. Friedrich & J. Pita, J. (Ed.), *Recherches en formation des adultes : un dialogue entre concepts et réalité* (pp. 127-162). Dijon : Editions Raison et Passions.

Filliettaz, L., de Saint-Georges, I. & Duc, B. (2008). « Vos mains sont intelligentes! » : Interactions en formation professionnelle initiale. Université de Genève : Cahiers de la section des sciences de l'éducation, 117.

MIAPARLE : Online training for discrimination and production of stress contrasts in L2 Spanish and L2 English

Jean-Philippe Goldman^a & Sandra Schwab^b

^aUniversity of Geneva; ^bUniversity of Zurich; University of Fribourg

MIAPARLE (miaparle.unige.ch) is a web application providing to the general public an innovative range of CAPT (computer-aided pronunciation teaching) tools for second language (L2) learners. MIAPARLE focuses on stress perception and production in Spanish and English. Such a tool is particularly useful for speakers whose native language is a fixed-stress language, such as French. These speakers have difficulties perceiving and discriminating stress contrasts ([1]), and therefore struggle when producing them.

To help L2 learners reducing their so-called stress 'deafness', MIAPARLE provides a training module composed of perception and production activities. In the perception activities, learners have to associate auditory stress patterns with visual patterns. In the production activities, learners are shown pictures and have to produce in L2 the word for the item they see. The participants' production is acoustically analyzed and visually represented with the stressed syllable highlighted. A comparison between the participants' production and

the native canonical production serves as feedback.

Pre- and post-tests, composed of two perceptual tasks, are used to evaluate the training effect : a Localization task ('Find the right word') and an Odd-One-Out task ('Find the different word'). The post-tests are similar to pre-tests, except that they comprise items that are not presented in the pre-tests, allowing the examination of the generalization of the training to words that are new for the learners.

By combining new IT tools and innovative teaching methodology, MIAPARLE fills a major gap in traditional teaching methods, in which prosodic aspects are usually neglected. Although 'application-oriented', MIAPARLE also has implications for research since the collection of L2 perception and production data constitutes a valuable corpus for research purposes in the fields of L2 acquisition and CAPT.

References [1] Dupoux, E., Pallier, C., Sebastián, N. & Mehler, J. (1997). A destressing 'deafness' in French?, *Journal of Memory and Language*, 36(3), 406-421.

Can rhythmic priming influence syntactic processing in typical adults?

Dávid György, Lna Azzam Ali, Doug Saddy, Julie Franck, Daphne Bavelier, Sonja Kotz^a

^aUniversity of Geneva

The investigation of potential links between the processing of language and rhythm has recently gained increased attention. Rhythm can be broadly defined as a more or less regular alternation of events over time. Time is a crucial dimension of both speech and music processing, and recent evidence suggests that temporal processing relies on subcortico-cortical networks that prepare cortical brain areas for higher level integration. As internal neural oscillations can synchronize to external oscillations, a regular temporal structure in the input can facilitate temporal and generating temporal predictions (Henry & Herrmann, 2014; Schwartze & Kotz, 2016). Experimental evidence shows numerous correlations between the processing of language and rhythm across various populations (Corriveau & Goswami, 2009; Gordon et al., 2015), but also that a rhythmically regular musical prime facilitates subsequent syntactic processing (Corriveau & Goswami, 2009; Kotz & Gunter, 2015). The present study aimed to explore whether a rhythmic priming effect can also be observed in typical adults. 100 native speakers of French with no known neurological or language disorders listened to silent, rhythmically regular or rhythmically irregular primes prior to performing a grammaticality judgement task on au-

ditorily presented sentences in which subject-verb agreement was either correct or incorrect. Based on recent work in agreement attraction, linguistic stimuli were constructed in a semi-artificial Jabberwocky language to eliminate semantic effects and focus on syntax. The experiment was run in two designs : a block design (N=50) was used to measure short and long-term effects of prolonged exposure to the same prime and a mixed design (N=50) was employed to investigate more immediate effects of rhythmic priming. Preliminary evidence suggests some influence of rhythmic priming on structural processing.

References

- Corriveau, K. H., & Goswami, U. (2009). Rhythmic motor entrainment in children with speech and language impairments : Tapping to the beat. *Cortex*, 45(1), 119–130. <https://doi.org/10.1016/j.cortex.2007.09.008>
- Henry, M. J., & Herrmann, B. (2014). Low-Frequency Neural Oscillations Support Dynamic Attending in Temporal Context. *Timing and Time Perception*, 2(1), 62–86. <https://doi.org/10.1163/22134468-00002011>
- Kotz, S. A., & Gunter, T. C. (2015). Can rhythmic auditory cuing remediate language-related deficits in Parkinson's disease? *Annals of the New York Academy of Sciences*, 1337(1), 62–68. <https://doi.org/10.1111/nyas.12657>
- Schwartze, M., & Kotz, S. A. (2016). Contributions of cerebellar event-based temporal processing and preparatory function to speech perception. *Brain and Language*, 161, 28–32. <https://doi.org/10.1016/j.bandl.2015.08.005>

La contrainte du V2 dans la production spontanée du suisse allemand

Eric Haeberli et Manuela Schönenberger, Université de Genève

Comme toutes les langues germaniques à l'exception de l'anglais, les dialectes du suisse allemand ont la propriété du «Verb Second» (V2). Une langue V2 se caractérise par le fait que le premier syntagme est immédiatement suivi par le verbe fléchi. Par conséquent, l'ordre du sujet et du verbe est inversé si le premier syntagme n'est pas un sujet, et l'ordre non-inversé est agrammatical. Ce contraste est illustré en (1) avec un exemple du suisse allemand.

- (1) a. *Etz isch sii füfedachzgi*
Maintenant est elle 85
« Maintenant elle a 85 ans » (O2-ML-CH,1918)
b. **Etz sii isch füfedachzgi*

Il a néanmoins été observé dans la littérature qu'il existe des exceptions à la contrainte du V2, mais ces exceptions peuvent varier à travers les langues à V2. Dans cette étude, nous examinerons le statut du V2 et de ses exceptions en suisse allemand en nous basant sur un corpus annoté de production orale

spontanée d'un dialecte suisse allemand que nous sommes en train de finaliser. Ce corpus contient un certain nombre de violations apparentes de la contrainte du V2. Deux exemples sont donnés en (2).

- (2) a. *Irgendwie me händ en*
en-quelque-sort nous avons un
Termin abgmacht
rendez-vous convenu
« En quelque sorte nous avons fait un rendez-vous » (MS-DS-PS-FIN,59)
b. *Denn me händ äbe*
Ensuite nous avons justement
nòchli Land und
encore-un-peu campagne et
Schtad
ville
« Ensuite nous avons justement encore un peu la campagne et la ville » (O3-ML-FP,1273)

Le but de ce travail est d'analyser le statut des exceptions au V2 en suisse allemand d'un point de vue quantitatif et qualitatif en tenant compte notamment de facteurs prosodiques, sémantiques et pragmatiques.

On-line syllable recognition in natural sentences with neural oscillations and predictive coding

Sevada Hovsepyan, Itsaso Olasagasti, Anne-Lise Giraud^a

^aDepartment of Basic Neurosciences, Campus Biotech, University of Geneva

Natural speech comprehension is a challenging operation that requires segmenting a continuous sound stream to connect it on-line with discrete linguistic neural representations. This operation partly relies on the coupling of theta and gamma neural oscillations that tracks and segments syllables and encode them in decipherable neural activity (1,2). Speech comprehension also strongly depends on top-down processes that predict on-line speech structure and content (3). We used neurocomputational modeling to explore how theta-gamma coupling interacts with bottom-up and top-down information flows during on-line speech perception. We built a generative model (4) that recognizes syllables in continuous natural speech signal, and in which theta oscillations detect syllable onsets to align both model's gamma activity with syllable boundaries, and top-down predictions with speech input. Simulations demonstrate that the best performing model combines top-down syllable duration ex-

pectations with bottom-up information about syllable onsets. i.e. when bidirectional information flows were coordinated and internal timing knowledge was exploited. These results show that the addition of theta oscillatory mechanisms to bidirectional information processes permits on-line speech processing. More broadly, this work illustrates that notions of predictive coding and neural oscillations can usefully be brought together to account for dynamic auditory processing.

References

1. Hyafil, A., Fontolan, L., Kabdebon, C., Gutkin, B. & Giraud, A. L. Speech encoding by coupled cortical theta and gamma oscillations. *eLife* 4, 1–45 (2015).
2. Giraud, A. L. & Poeppel, D. Cortical oscillations and speech processing : Emerging computational principles and operations. *Nat. Neurosci.* 15, 511–517 (2012).
3. Gagnepain, P., Henson, R. N. & Davis, M. H. Temporal predictive codes for spoken words in auditory cortex. *Curr. Biol.* 22, 615–621 (2012).
4. Friston, K. J., Trujillo-Barreto, N. & Daunizeau, J. DEM : A variational treatment of dynamic systems. *NeuroImage* 41, 849–885 (2008).

Measuring and enhancing the migrants comprehension of Italian administrative texts

Giulia Lombardi, Università di Genova

The aim of the research was to investigate the readability of Italian administrative documents among foreigners and offer clearer alternatives or set up clarity guidelines that might improve access to these documents. In the last years the phenomenon of migration has increased across countries and the migrants linguistic and social inclusion is becoming more and more urgent in our societies. Too often, the Italian administrative language tends to be unnecessarily difficult for all those who are L2 beginners in Italian language skills to become resident in Italy and yet need to deal with various red tape and formalities. The starter point of the research, in 2017, was a computational-linguistic analysis of a synchronic mono-thematic corpus which includes the most important forms foreigners have to submit in Italy, in order to find what lexical, semantic and syntactical structures were

too difficult for foreigners. Then, in 2018, 101 students of Italian L2 were tested on the comprehension of authentic Italian institutional texts. Many difficulties were singled out : the correlation between personal factors (like age, schooling, mother tongue and motivation) and reading comprehension was analyzed by a multiple regression analysis. In the beginning of 2019, 61 students have been tested on simplified texts; among them, 32 attended a specific language course. Data have been analyzed with t-test and Anova test : the amelioration of the comprehension on the simplified texts is statically significant ($df = 59$, $p\text{-value} = 1.066e-09$), while the manually reformulation seems to have a greater impact to respect to automatized lexical simplification. The language course is also a predictor of a better comprehension ($F\text{ value} = 4.56$, $p\text{-value} = 0.037^*$).

Brain structural correlates of dyslexia

D. Marie, S. Rutten & N. Golestani^a

^aBrain and Language Lab, Department of Psychology, University of Geneva

Developmental dyslexia is a disorder affecting the acquisition of reading and spelling abilities in 3–7% of the general population, in the absence of sensory or neurological damage, and despite typical intelligence and a favourable socio-educational environment. Early, post mortem studies on neuroanatomical abnormalities in dyslexic individuals revealed altered microstructure in the perisylvian and auditory areas of the left temporal lobe (eg. myelinated scars : glial cell growth instead of neurons). Macroscopic abnormalities have also been found using in vivo methods such as structural magnetic resonance imaging (MRI). These studies have revealed abnormalities in auditory brain regions. For example, it has been found that in dyslexic individuals, there is an absence or even a reversal of the usual leftward asymmetry of the planum temporale typically reported in healthy individuals. Recently, a quantitative structural MRI study found higher myelin content in the left auditory cortex of dyslexic individuals compared to controls, but these findings were not related to behavioural

measures of reading or of phonological processing known to be deficient in dyslexia.

In the present study, we used ultra-high-resolution quantitative structural MRI (7T) to compare the brains of 15 adults with a history of dyslexia and 17 healthy age, sex matched controls. We examined an index of intra-cortical myelin, measured using R1 maps, at the mesoscopic scale (0.6 mm³ resolution). We extracted individual myelin maps, and we assessed relationships with performance on behavioural measures of reading and of phonological processing. Preliminary findings reveal significant relationships across all participants between those behavioural measures, especially processing time, and myelination in a network of areas critical for language and reading. For example, myelination in temporo-parietal, frontal and occipital regions correlate with time taken to read pseudowords. Implications of these findings for the deficits observed in dyslexia and for compensation are discussed.

Affectivité dans les interactions de supervision en psychiatrie : perspective interactionnelle d'un enjeu relationnel en formation

Alexandra Nguyen, Haute École de Santé La Source, Lausanne et Université de Genève

La supervision constitue un espace privilégié de la formation des psychothérapeutes. Selon le courant du *Workplace Learning*, la supervision peut être envisagée comme une pratique formelle d'accompagnement au développement des compétences professionnelles (Filliettaz & Billett, 2015). En séance, le thérapeute convoque, par le récit, les difficultés relationnelles rencontrées avec le patient. L'affectivité dans les interactions a fait l'objet d'une vaste littérature consacrée aux productions langagières telles que les *storytellings* (Selting, 2010), la confiance ou le dévoilement de soi (Kerbrat-Orecchioni & Traverso, 2007). Quelles sont les ressources langagières mobilisées par les superviseurs pour accompagner le récit du thérapeute comportant une dimension affective manifeste? En quoi la mobilisation de ces ressources multimodales participe-t-elle à la professionnalité des superviseurs dans la gestion de l'affectivité en interaction? Une analyse interactionnelle basée sur 35 heures de supervision a été menée. Six tandems constitués d'un superviseur et d'un thé-

rapeute ont été recrutés dans des institutions de santé de Suisse romande. Dans la continuité des travaux conduits dans le domaine de la régulation interactionnelle des émotions (Prior & Kasper, 2016), les analyses montrent le rôle central de l'affiliation du superviseur pour permettre la nécessaire implication affective du thérapeute lors du récit ainsi que les effets de cette régulation affective sur le processus analytique que superviseurs et thérapeutes mènent à propos des enjeux relationnels du thérapeute avec son patient.

Références

- Filliettaz, L., & Billett, S. (2015). *Franco-phone Perspectives of Learning Through Work : Conceptions, Traditions and Practices*(Vol. 12) : Springer.
- Kerbrat-Orecchioni, C., & Traverso, V. (2007). *Confiance/dévoilement de soi dans l'interaction*(Vol. 37). Tübingen : Walter de Gruyter.
- Prior, M. T., & Kasper, G. (2016). *Emotion in multilingual interaction*(Vol. 266) : John Benjamins Publishing Company.
- Selting, M. (2010). *Affectivity in conversational storytelling. Pragmatics. Quarterly Publication of the International Pragmatics Association (IPrA)*, 20(2), 229-277.

Altering phonemic representations with 30Hz tACS in Dyslexia

Johanna Nicolle, University of Geneva

Phonological dyslexia is an hereditary developmental disorder mostly explained by a phonological awareness deficit and disabilities to discriminate acoustic differences between phonemic categories (Sprenger-Charolles et al. 2003; Serniclaes et al. 2012). In this study, Transcranial alternating current stimulation (tACS), a non-invasive brain stimulation technique used to modulate brain oscillations at specific frequencies is proposed to as a rehabilitation tools for dyslexia impairment. Based on recent neurophysiological findings, dyslexia have been linked to atypical neural activity related to auditory processing (Lehongre et al. 2011; Lallier et al. 2017). We therefore hypothesize that by applying tACS over the left auditory cortex, linguistic skills affected by this condition would improve in dyslexics. Related to this, fifteen adults with dyslexia and fifteen control participants received tACS at 30Hz, 60Hz and sham tACS stimulation across three separate ses-

sions and performed a battery of linguistic tests before, immediately after and one hour after stimulation to evaluated the tACS effectiveness. According to our predictions, results showed that dyslexic participants performed higher after the 30Hz stimulation, due to both an improvement in discriminating acoustic differences within the same phonemic category, in exchanging phonemes between two words and in reading more fluently. Moreover, this improvement positively correlates with the severity of phonological dyslexia. Our data provides evidences for the importance of phonemic perception and categorization in the development of phonological awareness and confirms the involvement of low gamma oscillations in phonemic representation and processing as well as in phonological awareness. Importantly, our findings emphasize the relevance of tACS as an intervention tool to improve speech perception and to increase phonological awareness abilities in dyslexics.

Présence médiatique et numérique d'une thématique de santé publique selon quatre langues

Karen Pelletier et Virginie Zimmerli, Université de Genève

Introduction. Depuis 2009, l'OMS et l'équipe du Docteur Pittet organisent tous les 5 mai une campagne mondiale consacrée à la prévention des infections et à la promotion de l'hygiène des mains. Dans cette étude, nous analysons les flux d'information sur cette thématique en quatre langues afin d'appréhender les retombées de cette campagne à l'échelle mondiale en termes de quantité d'information diffusée.

Méthodes. Du 3 octobre 2017 au 2 octobre 2018, l'outil *Search* a été utilisé afin de recueillir des statistiques sur la présence du mot-clef hygiène des mains en français, anglais, espagnol et portugais sur les médias sociaux. Ces données ont été comparées avec la présence de ces mêmes mots-clefs dans la presse, à l'aide de la base de données *Nexis*.

Résultats. Sur les médias sociaux, le mot-clef hygiène des mains en quatre langues et sur la période étudiée est

identifié dans 39'481 publications. Sur ces 39'481 publications, 31'123 sont en anglais, 3'245 en espagnol, 2'275 en portugais et 2'108 en français. Les médias privilégiés dans ces quatre langues sont les sites web (54.4%), Twitter (15.8%), Facebook (12.3%) et les médias en ligne (6.8%). La journée du 5 mai comptabilise 1'912 messages, soit 4.8% des publications de l'année. A titre comparatif, dans la presse, nous constatons également une sur-représentation des publications anglophones (2'604), suivi par les publications lusophones (305), francophones (268) et hispanophones (100).

Conclusion. L'anglais est la langue plus utilisée pour les publications autour de l'hygiène des mains sur le web (80.7% des publications) et dans la presse (79.5% des articles). Sur les médias sociaux, les publications en français sont très peu répandues. A l'inverse, les hispanophones semblent privilégier les médias sociaux à la presse.

Ordre temporel et cognition

Marina Petrossian, Université de Genève

Dans cette contribution, nous cherchons à savoir d'où vient l'ordre temporel, quelle capacité permet de reconnaître du temporel dans une information et à mettre en évidence la dimension temporelle « pure » sans parasitage, à savoir sans faire intervenir d'autres variables telles que la causalité ou la connaissance du langage. Le but de cette différenciation est de montrer que la temporalité est un phénomène cognitif basique à part (comme la causalité et la subjectivité, cf. Sanders et al. 1992) et que le temps, antérieur à la causalité, n'est pas forcément réduit à cette dernière (Piaget 1946, Nelson 1986, etc.). Afin de développer le sujet, nous allons recourir d'une part à une perspective cognitive et psychologique expérimentale et/ou développementale (Ratcliff 1995, Macar et al. 1992, etc.) qui sera suivie, d'autre part, de travaux en lin-

guistique (Sanders et al. 1992, Wilson & Sperber 2012, Grisot 2017, etc.).

Références

Grisot, C. (2017) « A quantitative approach to conceptual, procedural and pragmatic meaning : evidence from inter-annotator agreement », *Journal of Pragmatics*, 117, 245–263.

Macar F., Pouthas V. & W. J. Friedman (1992) *Time, Action and Cognition. Towards Bridging the Gap*, Kluwer Academic Publishers, The Netherlands.

Nelson K. (1986) "Event knowledge and cognitive development". In K. Nelson (Ed.), *Event Knowledge : structure and function in development*, 1–19, Erlbaum, Hillsdale, NJ.

Piaget J. (1946) *Le développement de la notion de temps chez l'enfant*, PUF, Paris.

Ratcliff M. J. (1995) *Le développement de la Temporalité chez l'enfant de 2 à 4 ans*, thèse de doctorat, Université de Genève.

Sanders T. J., Spooren W. P. & L. G. Noordman (1992) "Toward a taxonomy of coherence relations", *Discourse Processes*, 15(1), 1–35.

Wilson D. & D. Sperber (2012) *Meaning and relevance*, Cambridge University, Cambridge.

Cross-lingual word embeddings and the structure of the human bilingual lexicon

Maria Rodriguez & Paola Merlo, University of Geneva

Question. Research on the bilingual lexicon has uncovered fascinating interactions between the L1 (native language) and L2 (second language) [4]. We investigate cross-lingual word embeddings, bilingual word representations derived from neural networks, and ask whether they define spaces exhibiting the coactivation properties of the human bilingual lexicon (shared translation effect, false and true friends effects). We find that the similarity structure of cross-lingual word embeddings matches known experimental findings on the human bilingual lexicon.

The human bilingual lexicon. For L2 word pairs that share a translation in L1 (e.g., tool and dish translate as Hebrew *kli*), bilinguals judge shared-translation pairs as more related in meaning than L2 monolinguals [1]. False friends are words that share form but differ in meaning (e.g. Italian *arrangiare* for English *arrange*). They cause interference effects in bilinguals in lexical tasks [3].

True friends share both form and meaning (Italian *autunno* for English *autumn*). Bilinguals performing a lexical decision task in L2 are faster than expected for words like *type*, a near true friend [2].

Results. We calculate cross-lingual word embeddings (we use three different models) and measure the cosine similarity of different translation pairs. Our results match the human lexicon, showing shared translation effects and false and true friends effects. They also show, like for humans, that similarity based on meaning is stronger than similarity based on form.

References [1] Tamar Degani et al. Bidirectional transfer. *Journal of Cognitive Psychology*, 23(1) :18–28, 2011. [2] Ton Dijkstra et al. Recognition of cognates and interlingual homographs. *Journal of Memory and Language*, 41(4) :496 – 518, 1999. [3] Andrea Weber and Anne Cutler. Lexical competition in non-native spoken-word recognition. *Journal of Memory and Language*, 50(1) :1 – 25, 2004. [4] John N. Williams. The bilingual lexicon. In *The Oxford Handbook of the Word*. OUP, 2014.

Insécurité linguistique de l'enseignant en classe bilingue et résolution des problèmes de communication

Ivana Vuksanovic et Anne Grobet, Université de Genève
ivana.vuksanovic@unige.ch ; anne.grobet@unige.ch

Rares sont les travaux qui à ce jour se sont penchés sur la question des compétences langagières en L2 de l'enseignant de discipline non linguistique (histoire, mathématiques, biologie, etc.) en classe bilingue, principalement du fait que celles-ci sont présumées car nécessaires à la transmission des savoirs disciplinaires. Pourtant il arrive que des établissements se voient obligés d'employer des enseignants moins compétents du point de vue linguistique (certaines de leurs compétences étant au-dessous du niveau B2 du CECR) afin de maintenir l'existence de leur programme bilingue. Dans la présente étude, nous nous proposons de montrer comment des enseignants de disciplines non linguistiques (art et musique) gèrent leurs difficultés de communication afin de préserver leur face d'expert (Goffman

1967) face à des apprenants susceptibles de posséder des compétences langagières en L2 similaires aux leurs, en utilisant des stratégies d'évitement et de réalisation (Faerch & Kasper 1983 ; Bange 1992). En nous basant sur l'analyse d'interactions en classe, nous mettrons en évidence l'impact de ces stratégies sur l'élaboration des savoirs disciplinaires : il apparaîtra que les stratégies de réalisation, qui mettent pourtant plus en danger la face de l'enseignant, amènent davantage les étudiants à participer à l'élaboration des savoirs tandis que les stratégies d'évitement, qui permettent à l'enseignant de préserver son statut d'expert, semblent paradoxalement présenter un moins grand potentiel d'apprentissage dans la mesure où L2 n'y est pas explicitement thématifiée et où les apprenants sont moins sollicités.

Weakly-Supervised Concept-based Adversarial Learning for Cross-lingual Word Embeddings

Haozhou Wang^a, James Henderson^b, Paola Merlo^a

^aUniversity of Geneva, ^bIdiap Research Institute

Question. Distributed representations of words capture important linguistic information monolingually but also across different languages. We explore new augmented models of the adversarial framework based on the intuition that the concept, and not the word, is the right level of lexical alignment between languages, especially distant languages. The results of our experiments on bilingual lexicon induction confirm that our concept-based models yield significant improvements, especially for distant language pairs.

The model. The standard Generative Adversarial Network (GAN) framework plays a min-max game between two models : a generative model G and a discriminative model D . The generator G learns from the source data distribution and tries to generate new samples that appear drawn from the distribution of target data. The discriminator D discriminates the generated samples from the target data [1]. Applied to learning cross-lingual word embeddings, the objective of the generator G is to learn the transformation matrix W that maps the source to the target language

embedding space, and the discriminator D , usually a neural network classifier, detects whether the input is from the target language [2]. Assuming words in different languages are similar when they are used to describe the same topic or concept [3], we use concept-aligned documents (Wikipedia) to bring the generated embeddings of the source language words closer to the embeddings of corresponding words in the target language.

Results and Discussion. Our method improves over dictionary-based baselines on eight language pairs, bidirectionally and both for similar languages (English-German, English-Spanish, English-French, English-Italian) and for distant languages (English-Finnish, English-Russian, English-Chinese, English-Turkish). We achieve these results with as few as 2500 concepts.

References [1] Ian J Goodfellow et al. Generative Adversarial Networks. In NIPS 27, 2672–2680, 2014. [2] Guillaume Lample et al.. Word translation without parallel data. In 6th ICLR, 2018. [3] Anders Søgaard et al. Inverted indexing for cross-lingual NLP. In 53rd ACL/IJNLP, 1713–1722, 2015.

Speech-neural entrainment deficit in toddlers suffering from autism spectrum disorder

Xiaoyue Wang, Andy Christen, Jaime Delgado, Silvia Marchesotti, Holger Franz Sperdin, Stéphan Eliez, Marie Schaer, Anne-Lise Giraud^a

^aDepartment of Neuroscience, University of Geneva

Autism spectrum disorder (ASD) is a neurodevelopmental disorder (Lord et al., 2000) with impaired social communication including speech-related information process (American Psychiatric Association, 2013). Previous studies highlight abnormal responses to both finite speech segments and speech streams in both adults and children with ASD relative to non-affected subjects (TD) (Jochaut et al., 2015; O'Connor, 2012; Sperdin & Schaer, 2016; Wynn et al., 2018). Here, we hypothesize that ASD deficits in processing speech may results from a poor neural entrainment to track speech dynamic structure (Jochaut et al., 2015), especially at low-frequency bands. To address this issue, we used a naturalistic setting in which we recorded EEG activity of 14 ASD and 16 TD toddlers, while they were exposed to natural continuous speech. All kids were seated on their parents lap and watched 4 different cartoons, each lasting on average about 2.5 minutes. To test the extent to which speech stimuli induced neural entrainment, we used multiple linear regression with time-varying lag to learn the correspondence between the speech stimuli and the corresponding EEG segments. Our results indicate that on average ASD toddlers displayed a significant decrease in the speech-neural entrainment metric relative to non-affected group. Moreover, we used power analysis to test whether the deficit driven by abnormal response at specific neural-oscillation frequency. Our results show that ASD toddlers displayed a significant power reduction at

low-frequencies (1-12Hz), not only in the band corresponding to speech syllabic rate (5-12Hz) but also in the delta band (1-4Hz), which signals phrasal and prosodic cues (Ding et al., 2014). Our study provides evidence for the altered neural speech tracking mechanisms in ASD children at low frequency.

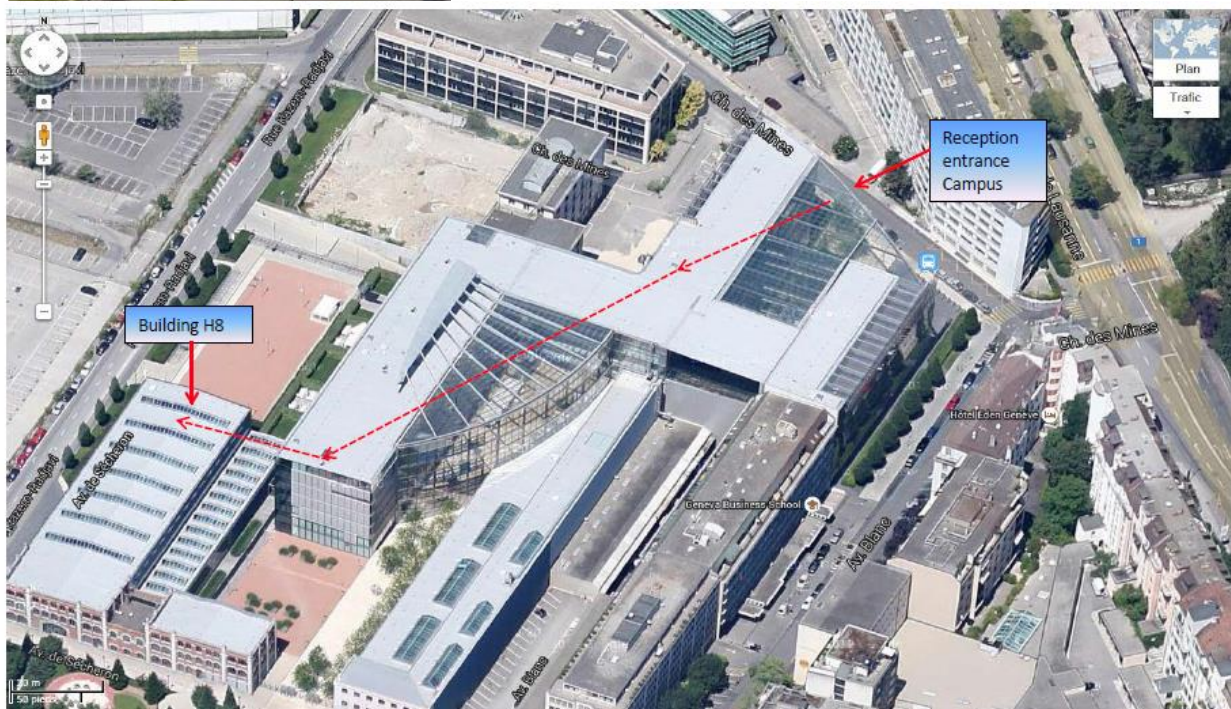
References

- American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.) : American Psychiatric Association.
- Ding, N., Chatterjee, M., & Simon, J. Z. (2014). Robust cortical entrainment to the speech envelope relies on the spectro-temporal fine structure. *Neuroimage*, 88, 41-46. doi :10.1016/j.neuroimage.2013.10.054
- Jochaut, D., Lehongre, K., Saitovitch, A., Devauchelle, A. D., Olasagasti, I., Chabane, N., Giraud, A. L. (2015). Atypical coordination of cortical oscillations in response to speech in autism. *Front Hum Neurosci*, 9, 171. doi :10.3389/fnhum.2015.00171
- Lord, C., Risi, S., Lambrecht, L., Cook, E. H., Leventhal, B. L., DiLavore, P. C., Rutter, M. (2000). The Autism Diagnostic Observation Schedule—Generic : A standard measure of social and communication deficits associated with the spectrum of autism. *J Autism Dev Disord*, 30(3), 205-223.
- O'Connor, K. (2012). Auditory processing in autism spectrum disorder : a review. *Neurosci Biobehav Rev*, 36(2), 836-854. doi :10.1016/j.neubiorev.2011.11.008
- Sperdin, H. F., & Schaer, M. (2016). Aberrant Development of Speech Processing in Young Children with Autism : New Insights from Neuroimaging Biomarkers. *Front Neurosci*, 10, 393. doi :10.3389/fnins.2016.00393
- Wynn, C. J., Borrie, S. A., & Sellers, T. P. (2018). Speech Rate Entrainment in Children and Adults With and Without Autism Spectrum Disorder. *Am J Speech Lang Pathol*, 27(3), 965-974. doi :10.1044/2018 AJSLP-17-0134

How to get to Campus Biotech



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From Geneva Train Station:

- Take bus 25 or 1 and stop at "Jardin Botanique"
- Take tram 15 and stop at "Maison de la Paix", walk downhill for about 100 meters towards the lake, then turn left on "Avenue Blanc". At the end of the street (about 300 meters), you will reach the main entrance of the building and the reception at 9, chemin des Mines.

From Geneva Airport:

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- At the "Gare Cornavin" railway station, tram 15 and bus 25 or 1 will take you to Campus Biotech.



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