

6th **B**arcelona **S**ummer School on **B**ilingualism and **M**ultilingualism

September 17th-20th, 2019

Pompeu Fabra University, Barcelona (Spain)



Universitat
Pompeu Fabra
Barcelona

Departament
de Traducció i Ciències
del Llenguatge



Contents

1. Venue Information.....	3
2. General Programme.....	4
3. Modules of the Summer School.....	5
4. Oral presentations 1	7
4.1. Abstracts - Oral presentations 1.....	8
5. Oral presentations 2	11
5. 1. Abstracts - Oral presentations 2.....	12
6. Oral presentations 3	14
6. 1. Abstracts - Oral presentations 3.....	15
7. Oral presentations 4	19
7. 1. Abstracts - Oral presentations 4.....	20
8. Abstracts - Poster Presentation A (Entrance Hall, M. Rodoreda Auditorium)	23
9. Abstracts - Poster Presentation B (Entrance Hall, M. Rodoreda Auditorium)	27
10. Organizing committee.....	31

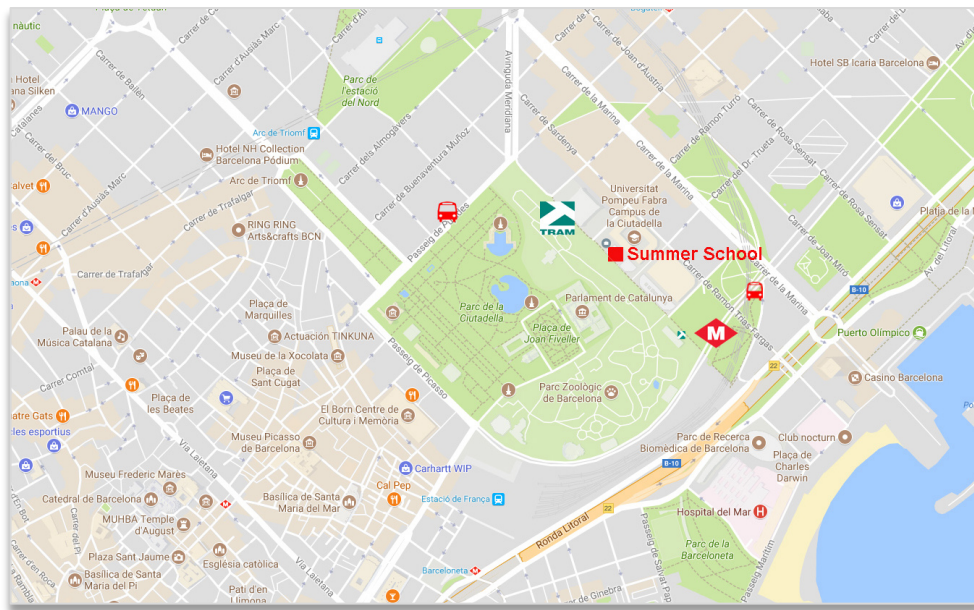
1. Venue Information

Location

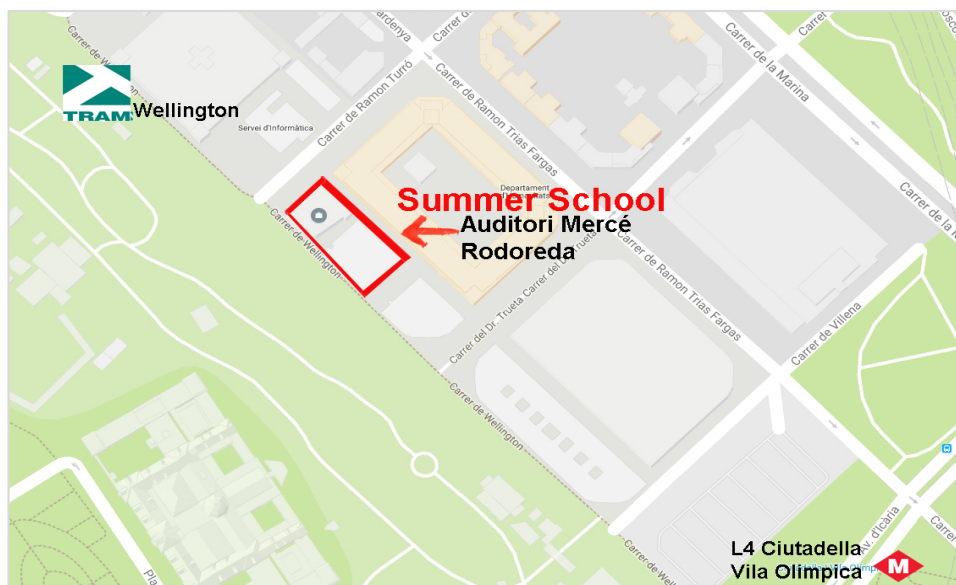
Pompeu Fabra University– Ciutadella Campus
Mercè Rodoreda Auditorium (Building 23)
C. de Ramon Trias Fargas, 25-27
08005 Barcelona

[https://www.upf.edu/bsbm/
bilingualism.school@upf.edu](https://www.upf.edu/bsbm/bilingualism.school@upf.edu)

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Pompeu Fabra University – Ciutadella Campus



2. General Programme

Tuesday, Sept. 17th

9:00 – 9:30	Registration
9:30 – 10:00	Welcome
10:00 – 11:30	Kees de Bot – What happened to the Levelt model and its bilingual versions?
11:30 – 12:00	Coffee break
12:00 – 13:00	Kees de Bot – What happened to the Levelt model and its bilingual versions?
13:00 – 14:00	Kees de Bot – Discussion
14:00 – 15:30	Lunch break (not provided)
15:30 – 17:00	Oral presentations 1 (4 talks)
17:00 – 17:30	Coffee break
17:30 – 18:30	Oral presentations 2 (3 talks)
19:00	Garden Reception

Wednesday, Sept. 18th

9:30 – 11:00	Denise Klein – Language experience as a window into brain plasticity and organization
11:00 – 11:30	Coffee break
11:30 – 12:30	Denise Klein – Language experience as a window into brain plasticity and organization
12:30 – 13:30	Denise Klein – Discussion
13:30 – 15:00	Lunch break (not provided)
15:00 – 16:40	Oral presentations 3 (5 talks)
16:40 – 17:40	Poster session A + Coffee break

Thursday, Sept. 19th

9:30 – 11:00	Núria Sebastián-Gallés – The onset of bilingualism: Specificities in the first year of life
11:00 – 11:30	Coffee break
11:30 – 12:30	Núria Sebastián-Gallés – The onset of bilingualism: Specificities in the first year of life
12:30 – 13:30	Núria Sebastián-Gallés – Discussion
13:30 – 15:00	Lunch break (not provided)
15:00 – 16:30	Oral presentations 4 (4 talks)
16:30 – 17:30	Poster Session B + Coffee break

Friday, Sept. 20th

9:30 – 11:00	Aneta Pavlenko – Bilingualism and forensic linguistics
11:00 – 11:30	Coffee break
11:30 – 12:30	Aneta Pavlenko – Bilingualism and forensic linguistics
12:30 – 13:30	Aneta Pavlenko – Discussion
13:30 – 14:00	Closure and certificates

3. Modules of the Summer School

Kees de Bot – University of Groningen, Groningen (The Netherlands)

What happened to the Levelt model and its bilingual versions?

In September 2019, it is 30 years ago that Levelt's 'Speaking'-book was published. In this presentation the development of the model will be discussed along with descriptions of a number of bilingual models that have been developed in the in course of those 30 years. This includes the models by Poulisse & Bongaerts, de Bot, Kormos, Abramson & Williams and Fernandes Boêchat. A number of core elements of the model will be elucidated with video-taped interview data from Levelt from January 2019 by de Bot.

Topics discussed include:

- The origins and goals of the model in the 1980s
- Reactions/reviews of the Speaking book
- Modularity vs continuity
- What model of 'language' the model is based on
- Feedback and feedforward
- Error-detection and correction
- Individual differences
- Steady-state or dynamic/self organizing
- The role of universal grammar
- Neuro imaging data as evidence
- What is variation and where does it start
- Do we really need a bilingual version of the model?

Denise Klein – McGill University, Montreal (Canada)

Using the study of language and language experience as a window into brain plasticity and organization

How does our experience with language impact human brain organization? In this session, I will focus on our research spanning three decades in which we combine behavioral methods with functional neuroimaging (PET and fMRI) under different language learning scenarios, to investigate how the brain is influenced by the age of acquisition, proficiency in the language, and the distinctive characteristics of languages. I will also discuss the use of anatomical techniques such as voxel-based morphometry

(VBM), cortical thickness measures, diffusion tensor tractography, and resting-state MRI to enhance our understanding of the critical-period phenomena and neural plasticity in the human brain. This program of research addresses questions about the capacity of the human brain to change as a result of learning. I will talk about the extent to which neural patterns are fixed and the extent to which these patterns can be altered later in life as a result of experience. The results of these studies reveal the neural underpinnings of human brain development in relation to the age of language exposure, and they suggest periods when learning language are most optimal. I will also discuss longitudinal studies and how these can be used to study language learning, neural biomarkers for language learning and brain plasticity in response to learning. Finally, I will introduce new tools we are developing using speech samples to understand how our brains change in health and in disease, specifically with a focus on using speech as a window into diagnosing neurological disease.

Núria Sebastián-Gallés – Pompeu Fabra University, Barcelona (Spain)

The onset of bilingualism: Specificities in the first year of life

How different is the process of language learning in infants exposed to two languages from birth? It was not so long ago when the available evidence pointed to a delay in language learning in bilinguals. At present, a bulk of studies indicates the existence of specific adaptations to the process of language learning. In the present talk I will focus on the emergence of such adaptations during the first months of life.

Aneta Pavlenko – University of Oslo, Oslo (Norway)

Bilingualism and forensic linguistics

The purpose of this class is to familiarize students with practical applications of bilingualism research in the field of forensic linguistics. I will begin with an overview of the areas of forensic linguistics that require our expertise and responsibilities of a forensic expert. Then, we will consider ways in which research on cognitive and affective aspects of bi- and multilingualism informs the field and more specifically the study of interactions between second language users and law enforcement. To examine what happens in such interactions, we will analyze a range of data, including data from murder and terrorism trials where I had testified as a forensic expert.

4. Oral presentations 1

Tuesday, September 17th, 15:30 – 17:00

15:30 – 15:50	José Aguasvivas Manzano , Basque Center on Cognition, Brain and Language (Spain) <i>'Txakurra' is 'perro' and 'dog': How input variability impacts bilingual word-learning in cross-situational settings</i>
15:50 – 16:10	Mohammed Chenteur , University of Vigo (Spain) <i>Motion Events in Second and Third Language Acquisition</i>
16:10 – 16:30	Anna Banaszkiewicz , Polish Academy of Sciences (Poland) <i>The time course of brain reorganization in hearing late learners of sign language</i>
16:30 – 16:50	Iris Strangmann , CUNY Graduate Center (USA) <i>The Cost (or Not) of Intra-sentential Code-switching – An Electrophysiological Study of Dutch-English Bilinguals in NYC</i>

4.1. Abstracts - Oral presentations 1

‘Txakurra’ is ‘perro’ and ‘dog’: How input variability impacts bilingual word-learning in cross-situational settings

José Aguasvivas^{1,2}, Jon Andoni Duñabeitia³, & Manuel Carreiras^{1,2,4}

1. BCBL, Basque Center on Cognition, Brain and Language; San Sebastian, Spain

2. Department of Basque Language and Communication, EHU/UPV; Bilbao, Spain

3. Centro de Ciencia Cognitiva (C3), Universidad Nebrija; Madrid, Spain

4. IKERBASQUE, Basque Foundation for Science; Bilbao, Spain

One critical aspect of learning a language is the mappings between word forms and their referents. Children and adults consider concurrent statistics of words to perform this task but also keep track of multiple contexts where the words appear, strengthening the word-referent mappings, a process called cross-situational statistical learning (CSSL). Previous evidence suggests that adult bilinguals outperform monolinguals in CSSL tasks only when two referents map to one word, depicting the learning of homonyms. However, there is limited evidence on what happens when two words map to one referent, a situation better depicting the bilingual experience. This research explores whether bilinguals show an advantage over monolinguals when learning one-to-one, two-to-one, and one-to-two word-referent mappings. Matched groups of Spanish-Basque bilinguals and Spanish monolinguals viewed ninety-six scenes, each comprised of three novel objects and three pseudowords in random order. They performed tests at three points during familiarisation. Overall results indicate that, while bilinguals and monolinguals did not differ in their scores in the one-to-one mappings, bilinguals were quicker to acquire them and outperformed monolinguals in the multiple mappings conditions. Importantly, the differences were more pronounced for the multiple mappings reflecting bilingual experience. We conclude that, when exposed to scarce and variable input, bilinguals can still accurately detect and track multiple structures. These results suggest bilingual advantages in language learning.

Motion Events in Second and Third Language Acquisition

Mohammed Chenteur

University of Vigo (Spain)

Second language acquisition (SLA) is a broadly studied branch of applied linguistics and English as a second language is the most widely analyzed field. One of the most relevant areas of study in SLA is the relationship between language and thought. The “thinking for speaking hypothesis” (TFS) constitutes the main framework of study. It claims that language influences the online thinking that occurs during the production of speech; this online thinking involves several speech domains among which the domain of motion

events is found. The study of motion events within the framework of TFS is a growing field of research nowadays and an important research area in the study of language acquisition and the relationship between language and cognition. The aim of this study is to provide a critical overview of research in TFS in SLA and outline a new field of study: TFS in third language acquisition (TLA). Our research tries to answer these five research questions: (1) To what extent are adult language learners able to learn the appropriate second language (L2) TFS patterns in speech and gesture? (2) To what extent is this learning influenced by the specific verbalized orientation of their first language (L1)? (3) Can the L2 also influence the “established” L1 TFS patterns? (4) Do L2 speakers end up with a unified/shared conceptual representation, or with a distinct representation for each language? (5) Do TFS patterns apply in third language acquisition? Findings clarify the role of TFS patterns both in second and third language acquisition and shed light on future studies on the relationship between language and thought in the bi/multilingual mind.

The time course of brain reorganization in hearing late learners of sign language

Banaszkiewicz A.¹, Matuszewski J.¹, Bola Ł.^{1,2}, Szczepanik M.¹, Kossowski B.¹, Rutkowski P.³, Szwed M.⁴, Emmorey K.⁵, Jednoróg K.⁶, Marchewka A.¹

1. *Laboratory of Brain Imaging, Nencki Institute of Experimental Biology, Polish Academy of Sciences, Warsaw, Poland;*
2. *Department of Psychology, Harvard University, Boston, USA;*
3. *Section for Sign Linguistics, Faculty of Polish Studies, University of Warsaw, Warsaw, Poland;*
4. *Institute of Psychology, Jagiellonian University, Kraków, Poland;*
5. *Laboratory for Language and Cognitive Neuroscience, San Diego State University, San Diego, USA;*
6. *Laboratory of Psychophysiology, Nencki Institute of Experimental Biology, Polish Academy of Sciences, Warsaw, Poland*

The neural plasticity underlying learning is a process rather than a single event, however the detailed dynamics of training-induced functional reorganization are rarely examined. Here, in order to understand the broad aspect of brain plasticity, we focus on sign language learning in hearing adults. This special case of second language requires not only acquisition of new vocabulary and linguistic rules, but also switching to a different sensory modality. 21 participants underwent an 8-month long sign language course with five neuroimaging sessions (one session before, three sessions during and one session 3 months after the course). At each session, we tested whether growing proficiency leads to changes in brain activity to sign language and a brain-wide reconfiguration of activity patterns due to the transition from sensory to linguistic processing. We also explored whether the above-mentioned processes are different depending on the level of linguistic processing (lexical or sentential). Language network reorganization occurred after 3 months of learning (second fMRI session), as reflected

by increased activation in modality-independent perisylvian language-related network, together with modality-dependent parieto-occipital, visuospatial and motion-sensitive regions. Despite further progress, no significant alterations in fMRI response were detected during the following months. Importantly, no changes in brain activity over time occurred in control task in subjects' native language (L1), providing strong evidence that brain alterations observed in L2 were training-specific. Our results indicate that large-scale brain reorganization occurs during the first months of sign language acquisition, and further consolidation and learning proceeds in a stable, local manner.

The Cost (or Not) of Intra-sentential Code-switching – An Electrophysiological Study of Dutch-English Bilinguals in NYC

Iris M. Strangmann, Lorraine K. Obler, Valerie Shafer

CUNY Graduate Center (USA)

Bilingual language use requires a sophisticated control mechanism: In single-language contexts, there is a need to select and maintain one language, while suppressing the other. In bilingual contexts, both languages are eligible conversational candidates such that switches can occur within the same utterance (code-switching), but the control mechanism has to monitor when a switch is felicitous. A potential mechanism for language control is inhibition, which is supported by studies demonstrating switching costs at the behavioral and neurobiological level. However, to date, the exact nature of code-switching costs during comprehension is unclear, specifically, whether switching costs are due to sentence reanalysis/repair processes, and/or to lexico-semantic processing difficulties. Moreover, switch-costs can differ between bilinguals depending on their experience, as posited by the Adaptive Control Hypothesis (ACH; Green & Abutalebi, 2013). Under this view, habitual code-switchers would show a lower processing cost than non-habitual code-switchers when encountering language switches.

This study compares Dutch-English bilinguals' processing of unilingual versus code-switched sentences using neurophysiological measures. Crucially, I compare unilingual sentences ending unexpectedly with code-switched sentences ending expectedly to examine whether switching costs are placed at the lexico-semantic and/or sentence level. Additionally, I examine effects of immediate language context by inducing either a unilingual or bilingual testing mode. Lastly, I look at participant-related factors, like code-switching frequency, through a language-background questionnaire to examine to what extent bilinguals' experience influences their language control mechanism. These findings will resolve contradictory results pertaining to how bilinguals control their languages and the neural substrate supporting this mechanism.

5. Oral presentations 2

Tuesday, September 17th, 17:30 – 18:30

17:30 – 17:50	Natalia Saez , Columbia University (USA) <i>L2 Prepositions, Modal Auxiliaries and Metaphorical Functions from a Complex Dynamic Systems View</i>
17:50 – 18:10	Anna Petrova , Higher School of Economics (Russia) <i>Early ERP effects in crosslinguistic priming</i>
18:10 – 18:30	Candice Frances , Basque Center on Cognition, Brain and Language (Spain) <i>The effects of contextual diversity on foreign and native language vocabulary learning</i>

5. 1. Abstracts - Oral presentations 2

L2 Prepositions, Modal Auxiliaries and Metaphorical Functions from a Complex Dynamic Systems View

Natalia Saez

Teachers College, Columbia University (USA)

Prepositions and modal auxiliaries have been widely acknowledged to pose significant difficulties when learning a second language (L2), even for advanced learners, due to their strong context dependency, complex distribution in discourse, and culture-specific conceptual information constraining their usage. However, their L2 developmental trajectories have scarcely been explored, and a systematic understanding of their functional complexity has only recently been offered within conceptual metaphor research. The present study in progress analyzes form-function mappings of prepositions, modal auxiliaries and metaphorical functions produced in written opinion exchanges over six months between advanced learners of L2 English with different L1s and English native speakers. It adopts Complex Dynamic Systems Theory to explore variation and variability in mappings, as well as emerging stable patterns over time, influences from initial conditions (e.g., L1), and possible co-adaptation between learners and their interlocutors. Interconnected physical, linguistic, and socio-cultural influences on mapping patterns are illuminated by analyzing functions from the discourse dynamics approach to metaphor, and exploring learners' thoughts through stimulated recalls. Given the significant difficulties posed by prepositions and modals, the study gauges whether learner mappings are amenable to change or cease to do so (i.e., fossilize) despite vast and intense experience with the L2.

Early ERP effects in crosslinguistic priming

Anna Petrova¹, Nikolay Novitskiy^{2,3}, Andriy Myachykov^{1,4}, Yury Shtyrov^{1,5}

1. *Center for Cognition and Decision Making, Higher School of Economics, Russia*
2. *Department of Linguistics and Modern Languages, The Chinese University of Hong Kong, Hong Kong SAR, China*
3. *Brain and Mind Institute, The Chinese University of Hong Kong, Hong Kong SAR, China*
4. *Department of Psychology, Northumbria University, Newcastle-upon-Tyne, UK*
5. *Center of Functionally Integrative Neuroscience, Institute for Clinical Medicine, Aarhus University, Denmark*

Multilingualism becomes the norm in the modern globalized world. One of the big research questions in this field is whether multilingual speakers have separate lexico-semantic access to word representations, or a shared storage and activation mechanism. This issue can be explored using a priming task to see whether primes in one language influence the processing of target words in the other. We investigated effects of crosslinguistic phonological and semantic similarity on the bilingual lexicon of

late unbalanced bilinguals. Our masked priming paradigm used L1 (Russian) words as masked primes and L2 (English) words as targets. The primes and the targets either overlapped – phonologically, semantically, both phonologically and semantically – or did not overlap. Participants maintained the targets in memory and matched them against occasionally presented catch stimuli.

Differences have been found in N170 and N400 components, but we went past the components that are traditionally scrutinized in psycholinguistic ERP research and shifted our focus to earlier effects, analyzing a time window around the P50 peak. The analysis of amplitude demonstrated significant main effect of semantics, and an interaction of semantic and phonological crosslinguistic match.

The evidence of early lexico-semantic activation in a masked priming task suggests a high degree of automaticity in lexical access. In fact, if a word in a one language can prime the processing of a word in another one, this might point towards a shared storage with common access. We may conclude that the semantic and phonological interplay between L1 and L2 suggest an integrated bilingual lexicon.

The effects of contextual diversity on foreign and native language vocabulary learning

Frances, C.¹, Martin, C. D.^{1,2}, & Duñabeitia, J. A.³

1. BCBL, Basque Center on Cognition, Brain and Language; San Sebastian, Spain

2. IKERBASQUE, Basque Foundation for Science; Bilbao, Spain

3. Centro de Ciencia Cognitiva (C3), Universidad Nebrija; Madrid, Spain

Although word frequency has historically been considered a significant predictor of performance in various language-related tasks, recent studies have questioned this, suggesting that contextual diversity is responsible for some of these effects. In an attempt to explore the impact of contextual diversity on incidental word learning in the first and second language (L1 and L2, respectively), we asked bilingual participants to read 30 short stories, in either of their two languages. The stories contained pseudowords that were spread out across the different texts in a controlled manner to test the role of contextual diversity, with some texts including several repetitions of the strings, while others contained a single instance. This allowed us to see not only the effects of contextual diversity on incidental learning but also to compare these effect across languages, contrasting L1 and L2 implicit learning. After reading the texts, participants completed a series of recognition and recall tasks. The results demonstrated language-dependent effects, as well as more general effects that did not rely on the language of the texts, showing direct implications for foreign language vocabulary learning, and helping us determine the optimal way of spreading practice or exposure to new vocabulary.

6. Oral presentations 3

Wednesday, September 18th, 15:00 – 16:40

15:00 – 15:20	Daniil Gnetov , Tomsk State University (Russia) <i>Effects of morphological structure on eye movements in reading Russian by native speakers of Russian and Tatar-Russian bilinguals</i>
15:20 – 15:40	Barbara Piotrowska , Edinburgh Napier University (UK) <i>Lost in translation: The effects of Bilingualism on rationality</i>
15:40 – 16:00	Chiara Boila , University of Potsdam (Germany) <i>Passive sentence processing in 4-year-old German monolinguals and bilinguals: Focusing on cognitive control abilities</i>
16:00 – 16:20	Janice Mifsud , The National Literacy Agency (Malta) <i>Making meaning through translanguaging practices in Mathematics</i>
16:20 – 16:40	Nicholas Grunden , Universitat Pompeu Fabra (Spain) <i>Impacts of phonological similarity on lexical retrieval in bilingual aphasia</i>

6. 1. Abstracts - Oral presentations 3

Effects of morphological structure on eye movements in reading Russian by native speakers of Russian and Tatar-Russian bilinguals

Daniil Gnetov¹, Timur Mashanlo¹, Seppo Vainio², Jukka Hyönä²

1. *Tomsk State University, Laboratory of Linguistic Anthropology, Russia*

2. *University of Turku, Finland*

The preferred fixating position during reading tends to be near the center of a word. The saccade programming is assumed to be governed by low-level information of word length and by orthographic irregularity that is gained from parafoveal vision. Recent studies by Yan et al. (2014) and Hyönä et al. (2018) have observed an effect of parafoveal morphological preview – morphologically complex words had initial landing positions closer to the beginning of the word, i.e. closer to the stem of the word. The goal of the current study is twofold. Firstly, we aimed to replicate the findings from previous studies in Russian -- a language typologically different from both Uighur and Finnish in terms of morphological structure. Russian is an inflected language, where word endings contain several grammatical meanings, as opposed to agglutinative languages, in which every grammatical meaning is represented by a separate morpheme. Secondly, we investigated if there was an effect of morphological preprocessing among high functioning Tatar-Russian bilinguals. We hypothesised that the effect of parafoveal morphological processing could be explained by the word structure in morphologically complex languages – speakers are prompted to constantly analyse morphological structure of the words, and as such, Tatar speakers might apply the same strategy when reading Russian. The preliminary results indicate no effect of morphological preprocessing for Russian speakers, but points to signs of parafoveal morphological preprocessing for Tatar-Russian bilinguals.

Lost in translation: The effects of Bilingualism on rationality

Lee Curley¹, Barbara Piotrowska²

1. *Open University (Faculty of Arts & Social Sciences; School of Psychology)*

2. *School of Applied Sciences, Edinburgh Napier University, UK*

Previous research has highlighted that bilinguals may have several cognitive advantages over monolinguals. The current piece of research, therefore, wanted to investigate if the foreign language effect extended to rationality. In other words, does the presentation of a decision in a non-native language attenuate biases in bilingual decision makers? However, unlike previous research that has investigated the effects of bilingualism on rationality by using specific decision scenarios, the current research aimed to investigate

said effects more globally by measuring rationality over a series of different decision scenarios each focussed on measuring a different heuristic/cognitive fallacy. The present study investigated the effects of bilingualism on rationality by testing four different groups of volunteers (English speaking monolingual group (N =70); Polish speaking monolingual group (N = 21); Bilingual Polish group who were presented with decision task in English (N =23); Bilingual Polish group who were presented with decision task in Polish (N =26)) on a series of commonly used decision making tasks aimed at measuring rationality. The results highlighted two important findings: 1) that bilingual individuals did not display more rational decisions in comparison to monolinguals; 2) the presentation of a decision in a non-native language did not aid rational decision making in bilinguals. The discussion presents two alternative explanations (global rationality hypothesis vs. cultural integration hypothesis) of the current results. The prior relates to how rationality was measured in the current study, and the later discusses the implications of an integrated bilingual group and its effects on rationality.

**Passive sentence processing in 4-year-old German monolinguals and bilinguals:
Focusing on cognitive control abilities**

Boila, Chiara; Fritzsche, Tom; Höhle, Barbara

University of Potsdam (Germany)

Monolingual children at the age of four years have problems in interpreting complex syntactic structures (Aschermann et al., 2004; Huang et al., 2013; Trueswell et al., 1999). Recent studies have linked these difficulties to the children's yet developing cognitive control system (Höhle et al., 2016; Minai et al., 2012). The current study investigates the relation between cognitive control abilities and the processing of passive sentences, a structure that is challenging for children (Fox & Grodzinsky, 1998). A group of four-year-old monolinguals (N=16) and simultaneous German-Italian bilinguals (N=16) performed in an eye tracking study using the visual word paradigm. The target image depicted the event of the sentence, the other showed the same action with roles reversed. Active and long passive sentences are presented with the cue to voice (auxiliaries *hat* or *wurde*) occurring either after or before the sentence subject. We predict that an early cue to voice prevents an initial interpretation of the first noun as agent and reduces the cognitive control demand on sentence processing resulting in better performance. Furthermore, children were assessed with two standardised tests (PPVT, TROG) and participated in two tasks assessing their cognitive control abilities (Flanker task, Rueda et al., 2004; Task-switching paradigm, Wiseheart et al., 2016). A first analysis of passive accuracy data reveals a comparable performance of monolinguals and bilinguals and no relation to cognitive control abilities. Analyses of eye tracking data, input and degree of bilingualism are ongoing and will be presented at the summer school.

Making meaning through translanguaging practices in Mathematics

Janice Mifsud, Joslyn Sammut, Dr. Lara Ann Vella

Language Policy Department, The National Literacy Agency (Malta)

This study investigates the use of translanguaging practices in Mathematics lessons. In a bilingual country where Maltese and English are the two official languages, educators use both languages to varying degrees during content lessons. Mathematics textbooks and most teaching materials within the local context are in English. Classroom observations were carried out in 17 Year 4 (ages 9-10) classrooms to investigate the way in which educators scaffold the teaching of concepts through language. The different classrooms represent a wide range of learner demographics and first language/s in Malta. Data was analysed for ways in which educators switch from English to Maltese to mediate learning and the way learners respond to this mediation. Based on this data, a glossary of terminology used by the educators and the children in both English and Maltese in Mathematics lessons is also being compiled. The findings from this study will be used to inform language in education policies and practices in Malta. In conclusion, this study will also continue to shed light on the value of translanguaging practices in content lessons.

Impacts of phonological similarity on lexical retrieval in bilingual aphasia

Nicholas Grunden¹, Federica Iaia¹, Carmen García Sánchez² and Marco Calabria¹

1. *Center for Brain and Cognition, Universitat Pompeu Fabra; Barcelona, Spain*
2. *Hospital de la Santa Creu i Sant Pau; Barcelona, Spain*

In a previous experiment, we demonstrated that bilingual aphasic patients show lexical retrieval impairments selectively in their non-dominant language when confronted with heightened semantic competition (Calabria et al., 2019). To further investigate how recovery of lexical information is disrupted in bilingual aphasia, in the current study we examined how retrieval might be affected by varying degrees of phonological similarity among target words.

Performance of 13 Catalan-Spanish bilingual patients with aphasia on a phonologically-blocked cyclic naming tasks in both languages was considered alongside the performance of 13 age-matched, neurotypical Catalan-Spanish bilinguals. All bilinguals were determined to be early, balanced bilinguals based on their linguistic histories and patients' type/severity of aphasia as well as translation abilities between languages were assessed via WAB and BAT scores, respectively.

Results indicate phonological similarity aided lexical retrieval in neurotypical participants while it provoked increased lexical competition in bilinguals with aphasia. Interestingly, these effects appear to be independent of language tested; aphasic patients showed greater interference in phonologically homogenous blocks in *both* their languages. Error analysis of aphasic patients' performance suggests that they experience diminished inhibitory control over phonological competitors during lexical retrieval.

7. Oral presentations 4

Thursday, September 19th, 15:00 – 16:30

15:00 – 15:20	Laura Fernández Merino , Basque Center on Cognition, Brain and Language (Spain) <i>Word learning in different linguistic contexts by 18-month-old bilingual infants</i>
15:20 – 15:40	Candice Frances , Basque Center on Cognition, Brain and Language (Spain) <i>Investigating strategic language choice in fluent bilinguals during a deception-inducing game</i>
15:40 – 16:00	Emanuele Casani , Università Ca' Foscari Venezia (Italy) <i>Effects of a metaphonological training on early literacy skills</i>
16:00 – 16:20	Alienor Girette , University of Toulouse (France) <i>Morphological Awareness and Reading in Bimodal Bilingual Deaf Children</i>

7. 1. Abstracts - Oral presentations 4

Word learning in different linguistic contexts by 18-month-old bilingual infants

Laura Fernández Merino¹, Marina Kalashnikova¹, Manuel Carreiras^{1,2,3}

1. *Basque Center on Cognition, Brain and Language; Donostia, Spain*
2. *Ikerbasque, Basque Foundation for Science; Bilbao, Spain*
3. *Euskal Herriko Unibertsitatea–Universidad del País Vasco; Bilbao, Spain.*

Bilingual infants face the tasks of differentiating their two languages and learning the sound contrasts that are relevant for each of their languages (Byers-Heinlein, 2014). Infants succeed in these tasks as they receive exposure to their languages and their vocabulary size in the two languages increases (Curtin et al., 2010). This project aimed to investigate bilingual infants' ability to selectively discriminate sound contrasts that are and are not phonemic in one of their languages depending on the linguistic context in which these contrasts occur. For this purpose, 18-month-old Basque-Spanish bilinguals completed a word-learning paradigm: half of the infants were immersed in a Basque environment and half in a Spanish environment during the entire task. Infants were habituated to the novel word /oθe/ presented in Spanish or Basque carrier sentences depending on the condition. In the test, infants heard three different pronunciations: /oθe/ (same as habituation), /ose/ (forming a contrast phonemic in Spanish but not Basque) and /otse/ (forming a contrast phonemic in Basque but not Spanish). If bilingual infants learn and perceive words according to the language they are hearing and are influenced by linguistic context, infants in the Spanish condition were predicted to detect the switch from /oθe/ to /ose/, showing recovery from habituation. Infants in the Basque condition were predicted to detect the switch from /oθe/ to /otse/. If expectations are fulfilled, 18-month-old bilinguals are not only sensitive to those specificities that differ in their languages, but use them in order to learn new words.

Investigating strategic language choice in fluent bilinguals during a deception-inducing game

Frances, C.¹, Duñabeitia, J. A.², & Thierry, G.³

1. *BCBL, Basque Center on Cognition, Brain and Language; San Sebastian, Spain*
2. *Centro de Ciencia Cognitiva (C3), Universidad Nebrija; Madrid, Spain*
3. *School of Psychology, Bangor University, UK*

Fluent bilinguals often use their two languages alternatively depending on context. Here, we explore strategic language use when bilinguals are experimentally motivated to lie. Previous studies have shown that lying and foreign language use have additive physiological effects (Caldwell-Harris & Ayçiçeği-Dinn, 2008; Duñabeitia & Costa, 2015),

reduce subjective emotionality (Caldwell-Harris & Ayçiçeği-Dinn, 2008), and increase emotional distance (e.g., Costa et al, 2014; Ivaz et al, 2016; Keysar, et al, 2012). To assess language use in participants encouraged to lie strategically, we engaged Welsh-English bilinguals in a game of dice rewarding the successful use of deception and correct detection of offer truth-value. Whilst participants made offers in their first language—Welsh—more often overall, this pattern was not different for true statements, forced lies, and free (strategic) lies. When analyzing the offer distribution by language, participants proportionately chose Welsh more for free lies but preferred English when they were forced to lie. Considering that participants freely chose to lie in only 15% of the trials, this study lacks sensitivity to establish strategic language use in voluntary deception. We now intend to increase statistical power by reducing the proportion of experimentally determined lies.

Effects of a metaphonological training on early literacy skills

Emanuele Casani

Dipartimento di Studi Linguistici e Culturali Comparati - Università Ca' Foscari Venezia (Italy)

Metaphonological skills, i.e. the abilities to recognize and manipulate speech sounds, are considered a prerequisite for the acquisition of literacy skills. Some studies confirm phonemic awareness in preschoolers to be a diagnostic predictor of the subsequent development of reading skills. RAN (Rapid Automatized Naming) of visual stimuli is also a predictor of written decoding. Nevertheless, longitudinal research has rarely focused on these skills among preschoolers, and constructive literacy prerequisites are often neglected in Italian kindergartens.

In this study, we report first steps of a longitudinal experiment conducted on 37 Italian children (17 bilinguals + 20 monolinguals). They attended three different trainings in the last year of kindergarten (a metaphonological training, a RAN training, and a placebo graphic training). Their phonological and metaphonological skills were tested twice in kindergarten (before and after training), and once in the first year of primary school together with sublexical reading and word writing.

Early results indicate that almost every metaphonological index is in place among children who attended the metaphonological training. This training seems to be more effective for bilingual children, who also maintain the effect after eight months, unlike monolinguals. The control group shows more problems than others. The statistical analysis reveals that verbal fluency has a significant effect on sublexical reading speed, whereas phonemic segmentation and RAN on word writing accuracy, suggesting that different portions of (meta)phonological competence predict different aspects of literacy.

Morphological Awareness and Reading in Bimodal Bilingual Deaf Children

Alienor Girette, Hélène Giraudo

CLLE, University of Toulouse, CNRS, France

Several studies showed a role for phonology in reading acquisition in deaf children (Transler, 2005) but few focused on the role of morphology and even less so when talking about sign language's speakers, taught in sign language from the early age of school (Daigle & al., 2006). The structural characteristics of the sign language suggest that phonology is highly related to morphology (as suggested by Aronoff & al., 2005). A thorough examination of French Sign Language (LSF) suggests that some signs may correspond to morphological composition (Bauer, 2004).

Our working hypothesis about the comparison of the different characteristics of these two languages in contact in the deaf reading learner, is related to the notion of morphological awareness.

To our knowledge, priming effects and in particular masked priming effects in which the masked primes are presented during a very brief duration have never been examined in deaf signers. We decided to run a first pilot priming experiment in order to establish if identity priming effects can be observed in this population.

In our presentation, a corpus of 62 morphological families in LSF and their corresponding forms in written French on which we carried distributional and comparative analyses will be presented as well as the results of our pilot priming experiment for the purpose of studying morphological awareness for these particular reading learners that do not have - or very few - access to any phonological awareness (Mayberry, del Giudice & Lieberman, 2011)

8. Abstracts - Poster Presentation A (Entrance Hall, M. Rodoreda Auditorium)

Wednesday, September 18th, 16:40 – 17:40

A01

Bilingual words and meanings: where do we stand and where are we headed

Roser Ferrer-Xipell

School of Education and Psychology, Universidad de Navarra (Spain)

The aim of this research is to explore the extent to which the semantic knowledge of a bilingual in his both languages overlaps, and which factors may have an influence. In order to do that, we need first to clarify how this lexical and conceptual knowledge is represented in the bilingual mind. In this poster, we present a review of several models of lexical access and storage, from the first models in the 80's based on descriptive evidence (the Activation Model by McClelland and Rumelhart, the Speaking Model of Levelt adapted by De Bot) to the more modern computer-based statistical proposals (the Bilingual Interactive Activation model by Dijkstra & Van Heuven, or the Revised Hierarchical Model by Kroll and De Groot), and those that combine both approaches (BLINCS model by Shook and Marian). These proposals are compared in terms of their specifications: oral vs written language, production vs comprehension processes, separated vs integrated lexicon, and so on. Based on this comparison, conclusions are drawn that serve as the starting point of an ongoing research project.

A02

Russian binomials processing in Khakas-Russian and Tatar-Russian bilinguals

Aleksandra Bub

Linguistic Anthropology Laboratory, National Research Tomsk State University (Russia)

This ongoing study looks at the processing of high and low frequency irreversible Russian binomials in bilinguals with high L2 proficiency using E-prime.

Binomials are coordinate constructions in which two words of the same word class are connected by a conjunction (e.g. “and” in English, “и” in Russian). These constructions are proven to be stored holistically in mental lexicon of native and proficient nonnative English speakers.

Our previous study proved that the above mentioned assumption is true for the native Russian speakers. The aim of the current study is to investigate whether this holds true

for Khakas-Russian and Tatar-Russian bilinguals. The Khakas and Tatar are two minority ethnic groups, whose permanent place of residence is the Russian Federation. Russian being the second language is evaluated by the bilinguals as active and dominating, their level of proficiency is high.

However, we hypothesize that their first language could affect the processing of Russian binomials. To test the hypothesis an E-prime experiment was designed. 60 frequent Russian binomials and their infrequent reversed forms were used to investigate the effect of frequency and word order on processing. The preliminary results show that RT in two groups of bilinguals is lower than in Russian native speakers. But frequency and word order effects are the same.

A03

Differences in the lexical component of the language faculty in L1 and L2 Russian speakers

Aleksandra Dusheiko

Linguistic Anthropology Laboratory, National Research Tomsk State University (Russia)

An ongoing study concerns the differences in the lexical component of the language faculty in Russian native speakers and Khakas and Tatar people who acquired Russian as an L2.

We are developing a vocabulary test that helps to identify those differences. The Russian version of the test is based on the Mill Hill Vocabulary Scale and consists of 88 words divided into two sets. While doing Set 1, respondents have to choose a correct synonym from the 6 given variants to a stimulus. Set 2 is intended for giving a definition to the stimuli. The stimuli are ranked by their difficulty.

The test was tested by a group of native speakers and a group of L2 Russian speakers whose first language was either Tatar or Khakas. The former group consisted of 21 people aged 18 to 21. The later consisted of 24 people aged 18 to 48. Age of acquisition in the bilingual group varies from 3 to 7 years old.

The analysis of the results has demonstrated that the number of the correct answers in the bilingual group is lower. The alignment of the samples and analysis of the results continues.

A04

The markup and meta-markup system in the Russian-Turkic bilingual corpus (RuTuBiC)

Zoya Rezanova, Irina Temnikova, Andrei Stepanenko

Linguistic Anthropology Laboratory, National Research Tomsk State University (Russia)

The paper presents a bimodal corpus that comprises speech recordings of Russian-Turkic bilinguals from Southern Siberia. The markup and meta-markup system employed in the corpus are intended to reveal cross-language transfer through annotated errors' correlating with sources of deviation and provide sociolinguistic portrayal of bilinguals, fixing their language experience, which will make it possible not only to pinpoint the linguistic phenomena, but also to trace the influence of social and linguistic factors on speech standard deviations' occurring. The basic principle of error annotation is marking a particular linguistic phenomenon within the language level. The source of deviation (intralinguistic or interlingual influence) is also marked. Besides, the markup system indicates a text's belonging to a particular discourse type, communication type, genre, and its topic. The research is also focused on the dynamics of transfers in the Russian spontaneous speech of Russian-Turkic bilinguals, the possibility of which is achieved by analyzing the transfer phenomena in the speech of bilinguals belonging to different age groups, based on the analysis of a generalized sociolinguistic portrayal of Russian-Turkic bilinguals.

A05

The Role of Cortico-Subcortical Loops in Speech Motor Sequence Learning: Learning curves

Snežana Todorović¹, Sonja A. Kotz², Elin Runnqvist¹

1. ILCB & LPL, Aix-Marseille Université, France

2. Maastricht University, The Netherlands

Despite their central role for speaking, the neural mechanisms sustaining speech motor sequence learning are still not fully understood. We know from the previous work on related skills and from one fMRI study (Segawa et al., 2015) about speech motor sequence learning that the medial frontal cortex, the basal ganglia and the cerebellum, supposedly specialized for different learning mechanisms, might be involved, but it remains unclear to what extent they work independently, in concert, or alternate in their contribution to learning. To answer these questions, I will conduct an MEG/fMRI experiment where participants will overtly pronounce previously unknown sequences of the type CCVCC (C=consonant, V=vowel) that are either legal (control condition) or illegal in their native language after audiovisual exposure. Additional task manipulations in the fMRI part of the experiment are introduced in order to assess

error-based learning via delayed auditory feedback and reward-based learning via additional monetary compensation.

In a behavioural experiment, we established a learning curve and the optimal way of presenting the stimuli, and we are currently running a second behavioural pilot with the goal to determine the learning curves of reward-based and error-based learning as well as the optimal delay for the delayed auditory feedback.

9. Abstracts - Poster Presentation B (Entrance Hall, M. Rodoreda Auditorium)

Thursday, September 19th, 16:30 – 17:30

B01

Psycholinguistic Database “Perceptual-based component of language semantics (Russian-Turkic language interaction)”

Zoya Rezanova, Olga Nagel, Timur Mashanlo

Linguistic Anthropology Laboratory, National Research Tomsk State University (Russia)

The research presents a Psycholinguistic Database Project aiming at the development of a database reflecting cross-reference of ethno-lingual language differences, respondents' bilingual status and type of grammatical categorization in modality ratings revealing perceptual-based component of language semantics in words within one language. The rating is based on five perception modalities: visual, auditory, kinesthetic, olfactory and gustatory and is done for the Russian words and their cross language equivalents in Tatar and Khakas, e.g. Russ. svet (eng. light) – Tat. iaktylyk, Khak. charykh.

To collect data revealing the influence of bilingual experience on modality ratings we engage Russian native speakers with no Russian-Tatar bilingual experience and Russian speakers whose native language is either Tatar or Khakas. The database includes sociolinguistic metadata of the relevant respondents (gender, age, education, profession, type of bilingual experience (active vs passive; age of acquisition; level of language fluency etc.)

Grammatical categorization influence is ensured by the stimuli range including words with shared conceptual meaning but of different grammatical class e.g. Russ. svet (noun, Eng. light) – svetlyi (adjective, Eng. light) – svetit (verb, Eng. to shine). The following formal linguistic characteristics are tagged in the database: part of speech, word building pattern, lexical grammatical class and semantic grouping.

B02

Cognitive processing of emotional words: bilingual aspect (Russian-Turkic bilingualism)

Alina Vasilyeva, Zoya Rezanova

Linguistic Anthropology Laboratory, National Research Tomsk State University (Russia)

In recent years, research on emotional vocabulary cognitive processing has become very popular. Quite often emotionality is considered in interaction with other

psycholinguistic factors, such as word frequency, arousal and valence. Moreover, word emotionality is analysed in various aspects, including bilingual one. In our work we investigate the features of cognitive processing of diminutives, which are a special class of emotional vocabulary, by Russian-Turkic bilinguals.

Our study consists of two stages, which were carried out consistently on native Russian speakers and then on bilinguals. At the first stage, the survey was conducted to obtain indicators of psycholinguistic characteristics of emotional and neutral words. Correlation analysis was made further. At the second stage, E-prime software experiment was carried out.

Correlation analysis showed a similar correlation between emotionality and other parameters in two subjects groups. Russian native speakers: emotion/frequency($r=0,433067$), emotion/evaluation($r=-0,520647$),emotion/contextual actualization($r=-0,467210$). Bilinguals: emotion/frequency($r=-0,203823$),emotion/evaluation($r=-0,562701$),emotion/contextual actualization($r=-0,304490$).

The results of the hardware experiment showed that both bilinguals and monolinguals process diminutives longer than neutral words($p=0.000$). However, this difference in bilinguals is influenced by word frequency and word length.

Therefore, the experiments showed that two subject groups have insignificant differences in attitude to emotionality and different sensitivity to it. We suppose, it can be explained by the bilingualism type – natural one with L2 dominance. However, more research into this direction is still necessary before obtaining a definitive answer to question about emotionality and bilingualism interaction.

B03

Transfer from L1/L2 in L3 English sentence processing: an ERP study

Mariia Naumovets¹, Tanja Angelovska², Dietmar Roehm¹

1. *University of Salzburg, Department of Linguistics*
2. *University of Salzburg, Department of English and American Studies, School of Education*

Although self-paced reading (SPR) has been used extensively in the field of L2 acquisition (see Marsden, Thompson & Plonsky, 2017, for a review), it has been rarely applied to L3 transfer studies, especially using online methods. Therefore, we conducted an ERP study based on our previous non-cumulative SPR and timed grammaticality judgment task (GJT) study to examine the neural mechanisms of L3 transfer and how it might be influenced by language dominance and phonological similarity. We investigated

sentence processing in L3 learners of English with advanced L2 German (V2 order) and various non-V2 L1s, comparing them to L3 learners of German with L2 English and a non-V2 L1 and a control group of L1 German native speakers. The participants' language dominance scores were assessed using the Bilingual Dominance Scale (Dunn & Fox Tree, 2009). We used violated and non-violated order in English compound sentences with two independent clauses joined by "and" followed by an adverb that was phonologically similar or non-similar to German. We expect to observe the effects of transfer in a LAN/P600 pattern, a biphasic pattern previously found for violations of a locally predicted word category (Osterhout & Holcomb, 1992, etc.), for the violated vs. non-violated condition.

B04

Lexical predictability effects on gender agreement between full DP object arguments and object-clitics

Victoria Cano Sánchez

Euskal Herriko Unibertsitatea–Universidad del País Vasco (Spain)

During sentence comprehension, we constantly make predictions about the upcoming words, (their semantics, syntactic category). Similarly, during agreement processing different features of information of the antecedent have to be predicted/retrieved. But what is the timing at which these prediction processes interact? Are lexico-semantic and morphophonological information considered independently first and integrated later (Friederici, 2002, 2011) or are they processed simultaneously from early points of processing (Hagoort, 2003)? An eye tracking experiment was conducted in order to investigate for the first time the course of interaction between lexico-semantic predictability effects with gender agreement between full DP object arguments and object-clitics. Thus, the Spanish sentences used factorially combined grammaticality (grammatical vs ungrammatical object-clitic gender agreement) and verb predictability (high-cloze vs. low-cloze verbs) manipulations. The First Fixation Duration, considered an early timing measure, already showed an interaction in the computation of verb-cloze probability and gender agreement, and so does the Total Fixation Duration. These results suggest that semantic and syntactic information interact already at early stages of the linguistic processing, favouring the interactive processing model of Hagoort, (2003). In the future, as a part of my doctoral thesis, my intention is to investigate these processes with elderly bilingual population.

Adaptive Prediction in the joint production of speech

Giusy Cirillo^{1,2}, Elin Rundqvist^{1,2}, Kristof Strijkers^{1,2}, Cristina Baus³, Noel Nguyen^{1,2}

1. *LPL – Laboratoire Parole et Langage*
2. *ILCB – Institute of Language, Communication and the Brain*
3. *UPF – Universitat Pompeu Fabra*

The project investigates the neural as well as cognitive correlates of adaptation affecting the mechanism of predicting what the interlocutor is going to say in a joint action setting. As any kind of model involving two or more people, language has been interpreted as a joint activity, in which efficient and rapid communication is achieved by constructing imitative plans during the relevant production stages (Pickering & Garrod, 2013). This process of adaptive prediction is treated under a neuro-cognitive perspective using three different experiments, where a participant take part in a joint picture-naming task in pair with a robot. Using neuroimaging methods to monitor the human participant's brain activity (EEG and fMRI), we try to determine whether the participant's predictive activation shows adaptation to partner-dependent characteristics over the course of the experiment or after relevant training. In the first experiment we investigate adaptive prediction of lexico-semantic properties by monitoring a progressive adaptation of the listener to an ambiguous but predictable response pattern which the artificial partner is programmed to perform, naming the semantic category (e.g., animal) instead of the basic level name (e.g., dog) of an object picture on a predictable subset of trials. Adaptation is expected to be manifest as a decrease in amplitude for ERP components related to prediction violation (e.g., N100, PMN, N400). Overall, the primary implication of these findings would be that models of speech processing should integrate the notion that prediction is adaptive, mirroring the speaker's detailed speech sound patterns as well as his/her linguistic choices.

10. Organizing committee

In Memoriam of **Albert Costa**, Director of the Summer School

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Nuria Sebastián-Gallés (Center for Brain and Cognition, UPF)

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