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**XII INTERNATIONAL  
SYMPOSIUM OF  
PSYCHOLINGUISTICS**  
VALENCIA 2015

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**Valencia / Spain**

**From 1 to 4 July 2015**

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***XII International Symposium of Psycholinguistics  
Valencia 2015***

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Symposium of Psycholinguistics"

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## **GENERAL PROGRAM**

### **Wednesday, July 1st**

- 15:00-15:30 Workshop / Symposium Registration  
15:30-18:00 Pre-Symposium Workshop "Analyzing psycholinguistic data: The new statistics"  
18:00-19:00 Symposium Registration  
19:00-19:45 Walking transfer to the Welcome reception  
19:45-21:00 Welcome reception at Botanic Garden

### **Thursday, July 2nd**

- 8:15 - 9:00 Registration  
9:00 - 9:15 Opening Ceremony  
9:15 - 10:15 Keynote lecture: Dr. Kate Nation (Oxford) "Nurturing a lexical legacy: understanding the transition from novice to expert in children's reading development"  
10:15 - 11:00 Oral session A  
11:00 - 11:30 Coffee break  
11:30 - 13:15 Oral session B  
13:15 - 15:00 Lunch  
15:00 - 16:30 Oral session C  
16:30 - 18:00 Poster session A and coffee  
18:00 - 19:00 Keynote Lecture: Dr. José E. García-Albea (URV) "From sound to meaning and from meaning to sound: A round-trip walk through psycholinguistics"  
19:00 - 20:00 Social program

### **Friday, July 3rd**

- 9:00 - 10:00 Keynote lecture: Dr. Ruth de Diego (ICREA Researcher, UB) "Cognitive and Brain Mechanisms in the Early Stages of Language Learning"  
10:00 - 11:00 Oral session D  
11:00 - 11:45 Coffee break  
11:45 - 13:15 Oral session E  
13:15 - 15:00 Lunch  
15:00 - 16:30 Oral session F  
16:30 - 18:00 Poster session B and coffee  
18:00 - 20:00 Social program  
20:30 Conference Dinner

### **Saturday, July 4th**

- 9:00 - 10:00 Keynote lecture: Dr. Jonathan Grainger (CNRS, Marseille) "Orthographic processing in man, monkey, and machine" "Conferencia SEPEX" (SEPEX CONFERENCE)  
10:00 - 11:00 Oral session G  
11:00 - 12:30 Poster session C and coffee  
12:30 - 13:30 Oral session H  
13:30 - 13:45 Conference closing  
15:45 - 20:30 Social program post-symposium

## **PRE-SYMPOSIUM WORKSHOP**

Time: Wednesday, July 1st. 15:30-18:00

### ***“Analyzing psycholinguistic data: The new statistics”***

Pablo Gomez , DePaul University (USA)

In recent years, there has been a “crisis of confidence” in the traditional methods to analyze data from psychology experiments. A number of new methods have been proposed, and this leaves novice and the seasoned researchers asking themselves important questions like: “are these methods a fad?”, “Should I just use a method that the reviewers will like?” This workshop discusses Morey & Rouder’s Bayesian Factors, Baayen’s LME, and Masson’s  $p(H_0|data)$ . All of these methods are models about data and each one of them comes with assumptions that researchers should understand before applying them. There will be a hands-on component to the workshop that will include analyzing a data set with the three methods in R.

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## **Oral Comunications**

**Thursday 2 July, 2015 10:15 to 16:30**

9:15AM to 10:15AM

### **Invited Talk**

#### ***Nurturing a lexical legacy: understanding the transition from novice to expert in children's reading development***

Kate Nation, University of Oxford

The last 20 years has seen major advances in our understanding of how children become skilled word readers. It is now widely accepted that in alphabetic languages, this ability has its underpinnings in strong decoding skills. However, it is also now recognized that this is not the whole story: beginning readers must ultimately move from having a reading system that is heavily reliant on alphabetic decoding to one that recognizes words rapidly via access to rich, high quality lexical representations. This talk will highlight the need to keep questions about learning at the heart of our theories and our methods. Put simply, to understand more about reading development, we need to understand more about how learning happens.

10:15AM to 10:30AM

#### ***Camping in the graveyard: Processing of interlingual Polish-English homographs***

Anna Maria Di Betta, Sheffield Hallam, Elzbieta Okurowska, Sheffield Hallam, Jane Morgan, Sheffield Hallam University, Sheffield (UK)

Interlingual homographs are words that have similar surface structure but completely different meanings across languages (i.e., "caravan" is a leisure vehicle in English, but it means hearse in Polish). This study investigates whether adult bilinguals living in a non-native (L2) environment automatically activate the native (L1) meaning of such words. Polish L2 speakers of English who were frequent users of their L1 and native English speakers read sentences which were biased towards the English meaning of the interlingual homograph (e.g., Last summer we went camping in our caravan). They then carried out a lexical decision task to target words which were either related to the English meaning (trailer), to the Polish meaning (cemetery), or were unrelated words. Native speakers showed priming for English-related targets only, whilst bilinguals also activated the native meaning of the interlingual homographs. Findings will be discussed in relation to non-selective access models of the bilingual lexicon.

10:30AM to 10:45AM

#### ***Are eventive alternations a question of polysemy? An experimental study***

José Manuel Igoa González, Universidad Autónoma de Madrid

María del Carmen Horno Chéliz, Universidad de Zaragoza

According to current proposals (Coll-Florit, 2012; Coll-Florit et al., 2009), verb alternation in syntactic contexts should be construed as a case of polysemy. Our aim in this study was to find experimental evidence to test such claim. Our argument hinges upon the assumption that polysemous words are more costly

to process than monosemous words, and thus competition among meanings in polysemous words incurs in longer processing times (see Rayner, 1998; Rodd et al., 2002; for reviews). In this study, we measured the processing cost of alternating ("molestar"-to bother) versus non-alternating verbs (e.g. "doler" -to hurt) in sentential contexts in two experiments, one with a self-paced reading task and the other with a divided-attention paradigm. Converging evidence from both experiments shows that alternating verbs yield faster processing times than non-alternating verbs. Based on these results, we conclude that eventive alternations should not be interpreted as cases of polysemy.

10:45AM to 11:00AM

***Towards developing a model of flexible semantic processing: Cross-task comparisons of semantic neighbourhood density and concreteness in visual word recognition***

Ashley Danguécan, Lori Buchanan, University of Windsor

The flexible nature of semantic processing is a topic of increasing investigation in psycholinguistics, as there is growing evidence that the behavioural effects of semantic variables are impacted by task-specific demands (e.g., Balota & Yap, 2006; Yap et al., 2012). Recent work in our lab has shown that two semantic variables, word concreteness and semantic neighbourhood density (SND; Buchanan, Westbury, & Burgess, 2001), interact to influence word recognition response times (RTs). Importantly, however, the nature of this interaction varies with task demands; that is, the degree of explicit semantic processing required (Danguécan & Buchanan, in preparation). The goal of the present study is to precisely chart the flexibility of semantic processing by comparing recognition RT patterns for words varying in concreteness and SND across tasks with different explicit semantic requirements. This work moves us closer to the development of a comprehensive theory of semantic processing in visual word recognition.

11:30AM to 11:45AM

***Functional dynamics of the bilingual brain***

Myriam Oliver (1), Manuel Carreiras (1) (2), Pedro M. Paz-Alonso (1), (1) BCBL. Basque Center on Cognition, Brain and Language, Donostia-San Sebastian, Spain, (2) IKERBASQUE, Basque Foundation for Science, Bilbao, Spain

Neuroimaging evidence suggests that ventral and dorsal networks are implicated in reading. However, it is still unclear how these pathways are engaged in bilinguals. Here, we present two fMRI studies examining functional dynamics of the main nodes within these networks, as a function of L2 age-of-acquisition (early, late), L2 language orthography (opaque, transparent) and reading demands (perceptual, semantic). Fifty-four native Spanish-speaking early and late bilinguals with Basque as their L2 (Study 1), and late bilinguals with either an opaque (English) or transparent (Basque) L2 (Study 2) participated. Results revealed that regions along the dorsal network were phonologically tuned, being more strongly engaged by participants with a transparent L2. Regions along the ventral network

## **Oral Comunications**

**Thursday 2 July, 2015 10:15 to 16:30**

showed a specialized semantic profile, being more activated and co-activated under semantic demands. Early versus late bilinguals showed tighter coupling across both networks in L2. This work provides novel insights about how the bilingual brain reads.

11:45AM to 12:00PM

### **Neural overlap of L1 & L2 semantic representations in bilinguals**

Eowyn Van de Putte, Wouter De Baene, Wouter Duyck, Ghent University

In a first fMRI study, we investigated the neural overlap between L1 and L2 semantic representations of translation equivalents in a production task (picture naming). Through MVPA, a pattern classifier was trained on the activation pattern associated with the naming of each of the 10 concepts in one language for 5 of the 6 blocks (training data). Subsequently, this pattern classifier was used to classify the activation pattern associated with the naming of the 10 concepts in the corresponding sixth block of the other language (test data). The results showed that the classifier was able to accurately predict which concept was named. These results provide evidence for the idea that conceptual representations of L1 and L2 overlap in the brain. To assure that the classifier performance only reflects the semantic overlap between the two languages, lexical similarity between the translation equivalents and visual similarities between the two images of a concept were maximally reduced.

12:00PM to 12:15PM

### **Cognate and non cognate priming effects with unbalanced Greek-English bilingual adults and children**

Aris Terzopoulos, Lynne Duncan, University of Dundee

Georgia Niolaki, Univeristy of Coventry

Jackie Masterson, Institute of Education, University of London

Masked priming in a lexical decision task was used to investigate representations of cognates in Greek-English bilingual participants. Experiment 1 involved adults who had English or Greek as their dominant L1. The task involved cognates (words similar in form and meaning, such as ball/μπάλα) and non-cognates (words similar in meaning, such as tree/δέντρο), as well as unrelated word primes. Priming for cognates was found only when the prime was in the participants' dominant language and the target was in L2. In Experiment 2, the task was the same but participants were 9 to 11 year old bilingual children, with Greek or English as their dominant language. Priming was symmetrical with larger cognate priming effects from L1 to L2 than from L2 to L1. Priming was not observed for non-cognates in either Experiment 1 or 2. Findings are discussed within the framework of theories of cognate and non-cognate word representation in bilinguals.

12:15PM to 12:30PM

***Cross-lingual Neighborhood effects in Lexical Decision and Reading***

Uschi Cop, Nicolas Dirix, Wouter Duyck, Ghent University

Both orthographic neighborhood density and frequency have been shown to facilitate or inhibit visual word recognition, dependent on task, instructions and/or stimuli (Andrews, 1997). Van Heuven, Dijkstra & Grainger (1988) were the first to show a cross-lingual neighborhood effect in Dutch-English bilinguals: the number of Dutch neighbors slowed down response times to English target words in a lexical decision task.

In a replication of their study, using the same stimuli, we found that, depending on word frequency, the number of neighbors speeded or slowed reaction times for L1 target words, and facilitated reaction times for L2 target words.

A natural reading database of eye movements for Dutch-English bilinguals showed both facilitatory and inhibitory cross-lingual neighborhood effects for L1 reading and L2 reading depending mainly on bigram frequency of the target word. These results show that the cross-lingual neighborhood effect is robust and not limited to the lexical decision task.

12:30PM to 12:45PM

***Stress constrains lexical access in native and non-native Spanish***

María Teresa Martínez García, Kristina Van Anne, University of Kansas

Rachel Brown, University of Arizona

Annie Tremblay, University of Kansas

The degree to which suprasegmental information contributes to lexical identity differs across languages. Whereas in Spanish suprasegmental information distinguishes among competing lexical hypotheses (e.g., PApa 'potato' vs. paPÁ 'father'), in English suprasegmental information typically coincides with segmental information (i.e., presence vs. absence of vowel reduction) (e.g., REcord vs. reCORD). Thus, unclear is whether English-speaking Spanish learners can use suprasegmental cues to stress in Spanish word recognition. Intermediate-to-advanced English-speaking Spanish learners and native Spanish speakers heard non-constraining sentences ending with a stressed or unstressed two-syllable word fragment (e.g., peLO- vs. pelo-) and chose the word corresponding to the fragment on the screen (e.g., "pelota" vs. "pelotón"). D-prime scores did not differ between the native and non-native group, with both groups using suprasegmental information to recognize Spanish words but only in the condition with stress. These findings are attributed to the larger number of (longer) multisyllabic words compatible with the unstressed fragments.

## **Oral Communications**

**Thursday 2 July, 2015 10:15 to 16:30**

12:45PM to 1:00PM

### **Second language learners use native phonology to understand L2 words**

Pedro Macizo, Alejandro Morillas, Laura Cánovas, University of Granada (Spain), Mind, Brain and Behavior Research Center (Spain)

The aim of this study was to evaluate whether second language learners (L2) used phonological codes of their first language (L1) to comprehend L2 speech even when it was incorrect and might drive to understanding errors. In Experiment 1, Spanish native speakers with very low fluency in English as L2 performed an auditory lexical decision task in which they decided whether the stimuli were a word in Spanish or English. The critical condition was composed of pseudowords in both languages whose phonology sound like a Spanish word (e.g., /be'kause/) and it corresponded to a legal orthographic word in English (e.g., because). The participants were slower and they committed more errors in response to these pseudowords relative to control pseudowords with Spanish phonology that did not correspond to orthographic words in L1 and L2 (e.g., bucause). In Experiment 2, the magnitude of this effect was larger in a group of L2 learners with more fluency in L2 relative to participants in Experiment 1. These results suggest that second language learners made a phonological adaptation of L2 phonology to their native language. L2 learners created false phonological representations of L2 words and they used them to understand L2 speech.

1:00PM to 1:15PM

### **The impact of L2 proficiency on sensitivity to morpheme units in written word processing**

Séverine CASALIS, SCALab CRNS & Univ Lille, France

Eva Commissaire, LPC, Univ Strasbourg, France

Lynne Duncan, Univ of Dundee, Scotland, UK

An important question for models of bilingual processing is to understand how second language (L2) learners process morphology during visual word recognition. This study explores the sensitivity of L2 learners to written morphemes in a L2 lexical decision task by manipulating the presence of embedded words and suffixes among items. Further, the influence of proficiency on such sensitivity is examined by contrasting the performance of two groups of French students having learned English as L2 at school. The low-proficiency group was more sensitive to the presence of an embedded word than the high-proficiency group in both accuracy and speed. However, pseudowords made up of both an embedded word and A suffix were significantly more likely to be wrongly accepted as words than other pseudowords by both proficiency groups. In sum, L2 learners, including those low in proficiency, show sensitivity to the morphological structure of L2 written words.

3:00PM to 3:15PM

***Can context aid lexical selection during speaking?***

Zeshu Shao, Max Planck Institute for Psycholinguistics

Joost Rommers, Psychology Department and Beckman Institute, University of Illinois

Difficulties in saying the right word at the right time arise at least in part because multiple response candidates are simultaneously activated in the speaker's mind. This has been simulated using the picture-word interference task. However, words are usually produced in context, in the service of achieving a communicative goal. We embedded the picture-word interference task in a dialogue setting, where participants heard a question and named a picture as an answer to the question (ignoring a superimposed distractor word). The question was either closely or loosely semantically related to the target. Results of mixed-effect modeling showed that naming latencies were shorter when preceded by a closely related question (context effect),  $t = 8.08$  and when accompanied by an unrelated distractor (interference effect),  $t = 3.12$ . More importantly, interference effect was reduced after related questions,  $t = 2.00$ . This suggests that broader context can help overcome lexical selection difficulty.

3:15PM to 3:30PM

***A PPI analysis of Russian verb production***

Natalia Slioussar, HSE, Moscow, and St. Petersburg State University, Russia

Maxim Kireev, IHB RAS and St. Petersburg State University, Russia

Alexander D. Korotkov, IHB RAS, Russia

Tatiana V. Chernigovskaya, St. Petersburg State University and IHB RAS, Russia

Functional connectivity between brain areas involved in the processing of complex language forms remains largely unexplored. We conducted an fMRI experiment in which participants generated forms from different types of Russian verbs and nouns as well as from nonce stimuli. The data were subjected to a whole brain voxel-wise analysis of context dependent changes in functional connectivity (psychophysiological interaction analysis, PPI). To date, PPI evidence on inflectional morphology has been scarce. We found that functional connectivity between the left inferior frontal gyrus (LIFG) and bilateral superior temporal gyri was significantly greater for regular real verbs than for irregular ones. Furthermore, we observed a positive covariance between the number of mistakes in irregular real verb trials and the increase in functional connectivity between the LIFG and the right anterior cingulate cortex in these trials, as compared to regular ones. Our results therefore allow for dissociation between regularity and processing difficulty effects.

## **Oral Comunications**

**Thursday 2 July, 2015 10:15 to 16:30**

3:30PM to 3:45PM

### ***Interference of comprehension on planning in dialogue***

Mathias Barthel, Sebastian Sauppe, Antje Meyer, Max-Planck Institute for Psycholinguistics, Nijmegen

Gaps between turns in conversation are commonly very short. To achieve this timing, do next speakers start to plan their turn already during their interlocutor's turn, despite interference of language input on planning known from monologic tasks? This question was addressed in German with a novel task-oriented dialogue paradigm, using a confederate and manipulations of the informativity and projectability of the ending of critical turns. Thirty-eight participants' eye-movements and response latencies were analyzed. Participants were found to start planning their response as early as possible - irrespective of the distance to the completion point of the current turn - thereby shortening the gaps after turns with non-informative endings. Interestingly, these findings were not modulated by the projectability of turn-ends. Surprisingly, interference of incoming speech on planning was equally severe in projectable and non-projectable situations. The results thus suggest that well-aligned timing in turn-taking relies on early message anticipation and response planning.

3:45PM to 4:00PM

### ***The use of probabilistic information in spoken language production: A study of speech errors***

Svetlana Gorokhova, Saint Petersburg State University

2550 phonological, semantic, and syntactic speech errors (slips of the tongue) spontaneously produced by native Russian speakers were analyzed for probabilistic factors such as target and error word frequency, word length, age of acquisition (AoA), target-error cooccurrence strength, and word association norms to find whether speakers use any kind of probabilistic information about lexical units and grammatical constructions during spoken language production. The errors were collected by recording everyday conversations and live TV and radio programs. The analyses were based on the data from the Russian National Corpus, Russian Word Association Thesaurus, and experimentally obtained AoA ratings for target and error words.

The results suggest that probabilistic information is relevant in different domains of language production including phonological encoding, lemma retrieval, selection of inflected word forms, and grammatical agreement computation, and that probabilistic factors are predictive of speech errors.

4:00PM to 4:15PM

### ***Anticipation processes in L2 listening comprehension***

Alice Foucart, Elisa Ruiz-Tada, Universitat Pompeu Fabra  
Albert Costa, Universitat Pompeu Fabra - ICREA

Speech comprehension is usually more challenging in a second (L2) than in a first



language (L1). The present study investigated whether anticipation processes take place in L2 listening comprehension, like in reading comprehension (Foucart, Martin, Moreno, & Costa, 2014). We recorded French-Spanish late bilinguals' brain activity as they listened to high-constrained Spanish sentences. The ERPs were time-locked on the article preceding the critical noun, which was muted to avoid overlapping effects. Articles that mis-matched the gender of the expected nouns triggered a negativity (280-680 ms). A subsequent lexical recognition task revealed that, although both "expected" and "unexpected" words were muted during the listening phase, "expected" words were (falsely) recognized significantly more often than "unexpected" words. Overall, the results suggest that, like in L1 (Foucart, Ruiz, Costa, in press), anticipation processes are at play during L2 speech processing, and they allow creating a memory trace of a word prior to presentation.

4:15PM to 4:30PM

***Production of conjoined noun phrases requires sustained attention***

Suzanne R. Jongman, Antje S. Meyer, Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands

Ardi Roelofs, Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands

Language production has been shown to require sustained attention, the ability to maintain alertness over time. However, the relevant evidence stems from dual-task experiments, and it is possible that sustained attention is less relevant when speaking is a person's only task. To assess these options, a study was conducted with 62 Dutch adults, who carried out a dual-task experiment (single noun production + arrow discrimination) and a purely linguistic task (production of noun phrase conjunctions). Sustained attention ability was assessed using a continuous performance task. Ex-Gaussian analyses of the speech latencies and correlational analyses showed that sustained attention correlated with the proportion of slow responses (tau parameter) in both tasks. The results indicate that the production of conjoined noun phrases requires sustained attention, and that language production happens less automatically than has often been assumed.

6:00PM to 7:00PM

***Invited Talk***

***From sound to meaning and from meaning to sound: A round-trip walk through psycholinguistics***

Jose E. García-Albea, Universitat Rovira i Virgili

A brief survey of my long-standing involvement in psycholinguistics will be reported, as a way of illustrating the development of the discipline in the last 40 years. One of the first motives of my interest in language was the astonishing impression produced by such a close and systematic relation that can be achieved between two types of entities -sounds and meanings- so heterogeneous

***Oral Communications***

***Thursday 2 July, 2015 10:15 to 16:30***

and distant from each other in arbitrary ways. In order to fill that arbitrary gap, by contributing to the regular transition from sound to meaning (in both directions), a mediating computational device for transforming representations would be needed. The agenda for psycholinguistic research we (I and my colleagues during the years) devised from the beginning was that of studying the levels of processing in linguistic performance, either in language comprehension or in language production. We have then tried to cope with questions about the relative overlap between both performance faces, the role played by language-specific information and other extra-linguistic information, the constraints on the flow of information, or the modular vs. interactive character of those language processes. A very ambitious agenda indeed -augmented by our also prevalent concerns on language disturbances, on one side, and on bilingualism, on the other side-, so that whereas we have not been able to accomplish it in many aspects, I hope that at least it has contributed to open new paths in the kind of psycholinguistic research developed during the last decades.

4:30PM to 6:00PM

***Bilingual advantages in code-switching: an experimental study***

Yuliya Leshchenko, Tamara Dotsenko, Tatyana Ostapenko, Perm State Humanitarian Pedagogical University

The paper presents an experimental study of code-switches by bilinguals and monolinguals between their native language/languages (NL) and the foreign language (FL).

An experiment with the task to produce a chain of code-switching associations to the given stimuli words was run with two groups of university students: 1) bilingual native speakers of the Komi-Permyak/NL(1) and Russian/NL(2) languages studying English/FL in classroom settings and 2) monolingual native Russian speakers studying English/FL in classroom settings. The experiment included 3 separate stimuli lists (in Komi-Permyak, Russian and English) for bilinguals and 2 stimuli lists (in Russian and English) for monolinguals.

The results prove that bilinguals (as compared to monolinguals): 1) demonstrate a significant advantage in the overall time of fulfilling experimental tasks for the NL(1), NL(2) and FL stimuli and 2) code-switch freely from the FL to the NL(1)/NL(2) and back, while monolinguals are strongly restricted both in the direction and frequency of their FL code-switches.

The results are discussed in the frameworks of the psycholinguistic theory of bilingual costs and advantages in speech processing.

4:30PM to 6:00PM

***Specific language impairment: Sentence repetition and syntactic complexity***

Zunino, Gabriela Mariel, UBA - CONICET

Casajús, Andrea, UBA

Saslavsky, Daniela, Mantiñan, Nancy, UBA - Hospital Güemes

As part of a larger study that aims to produce a diagnostic battery to evaluate language acquisition disorders in Spanish, we present here the design of a test that will be part of the entire instrument: sentence repetition (SR). The test controls extension (number of syllables) and syntactic complexity (a series of formal criteria) as key variables.

In addition, we analyze the results obtained after its administration in a pre - pilot phase. 60 children organized into four groups according to diagnosis (SLI vs. control) and age (5 to 6 years 11 months and 7 to 9 years 11 months) were evaluated. Interestingly, our results indicate that the test not only significantly discriminate between children with SLI and controls, but, due to its controlled organization of syntactic complexity, is also considerably sensitive to different age groups and levels of disorder.

## Posters

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4:30PM to 6:00PM

### **Automatic categorization of letters as consonants and vowels during reading: evidence from a cross-case matching task**

Virginie Drabs,LCLD, CRCN, Alain Content,LCLD, CRCN, Fabienne Chetail,LCLD, CRCN, Université Libre de Bruxelles (ULB)

Many recent studies have provided evidence that consonant and vowel letters are processed differently during reading, thus suggesting that our cognitive system categorizes letters as consonants and vowels. However, this hypothesis has never been tested directly. The goal of the present study was to determine whether letters are automatically categorized during word recognition. In a cross-case matching task, participants had to decide whether the referent and the target were identical or not. The targets were pseudowords created by replacing one letter of the referent by a letter of the same category (e.g., CALMER-calver or TAUPE-taipe) or by a letter of the other category (e.g., CALMER-calier or TAUPE-taspe). If the categorization of letters is automatic, participants should have more trouble detecting a mismatch when the substituted letter is of the same category than when it comes from the other category. Our results partly confirmed the hypothesis. Further experiments are in progress.

4:30PM to 6:00PM

### **Symbolic representations versus embodiment: The role of depth of processing**

Simritpal K. Malhi, Lori Buchanan,University of Windsor

According to the symbolic representation account, word meaning can be sufficiently captured by lexical co-occurrence models. In contrast, the embodied cognition account maintains that words are understood via simulated perceptual experiences (Barsalou, 1999). The symbol interdependency hypothesis reconciles these different approaches by proposing that we use symbolic representation most of the time and embodied representation when deeper processing is required (Louwerse, 2007). To test this hypothesis, participants ( $n = 42$ ) were randomly assigned to either a shallow task (i.e. do these word-pairs have the same number of letters?), an intermediate task (i.e. are these word-pairs related in meaning?), or a deep task (i.e. are these word-pairs shown in a correct spatial configuration?). Critically, target word-pairs had both symbolic and embodied factors manipulated. Preliminary results support the symbol interdependency hypothesis with the symbolic factor salient in the intermediate task and the embodied factor salient in the deep task.

4:30PM to 6:00PM

### **Effects of emotional content on word recognition**

Javier Rodríguez-Ferreiro,Universitat de Barcelona  
Robert Davies,Lancaster University

The influence of emotional content on language processing remains unclear. Pre-

vious research conducted in English has obtained contradictory results regarding the effect of valence on word recognition. Whereas some studies claim that valence linearly predicts recognition times, with negative words being processed more slowly than positive ones, others have observed categorical facilitation of both positive and negative stimuli compared to neutral words. We studied the influence of valence over reaction time data from previous large-scale word naming and lexical decision studies in Spanish, including various lexical and semantic measures as covariates. Our results show a continuous effect of valence: negative words were recognized more slowly than positive words, on average. The effect was stronger in the lexical decision than in the word naming task and it survived the inclusion of arousal and other lexical-semantic control variables. This study highlights the relevance of affective content to word recognition.

4:30PM to 6:00PM

**Computing beliefs in argumentative discourse: online evidence for the locus of inference validation**

Rivera, D., J. Demestre, Department of Psychology CRAMC Universitat Rovira i Virgili

Previous research on argumentation showed that both premises of an argument had a conjoint influence in evaluating a claim's believability, and that when a premise was lacking, the cognitive system built it. Now we examine whether the implicit premise is non-strategically validated online, and its precise locus. We constructed arguments where a major/minor premise could be implicit/explicit, both with high/low credibility presented with the same conclusions in a repeated-measures design experiment. We registered reading-times by a self-paced moving-window method and the believability of the claim's argument on a separated task. We expected to find differences in reading times at some precise segments along the claim's predicates as a function of the implicit premise's credibility as well as which was that implicit premise (major/minor). Moreover, reading and evaluation times with argument's credibility correlations were expected. Results confirmed our predictions, and will be discussed under the validation, epistemic-monitoring and contradiction paradigm framework.

4:30PM to 6:00PM

**Invisible verb-final parsing in German: Uncovered by NPis**

Constantin Freitag, Josef Bayer, Universität Konstanz

German is assumed to be verb-final even though in main-clauses finite verbs appear in second position (V2).

We present evidence for the psychological reality of the head-final nature via NPI-licensing.

Negative polarity items (NPIs), like "any" have to be licensed by c-commanding negation-operators. Unexpectedly, in V2-position the German NPI-verb "brauchen" 'have to' precedes the negation. To be licensed the NPI (like all V2-verbs) must undergo reconstruction into the sentence-final base-position. In (1), a parser

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with minimal assumptions will reconstruct the NPI-verb to #1. However, #2 is the NPI's base-position and NEG1 is therefore irrelevant for NPI-licensing.

In a self-paced reading experiment we found prolonged RTs at #1 in absence of NEG1, i.e. if NPI-licensing (temporarily) fails (cf. filled-gap effect). This suggests that verb reconstruction in German is a reflex-like parsing process that applies blindly, i.e. also in environments in which it fails semantically.

(1) [...NPI...SUBJECT[...(NEG1)...#1]...NEG2...#2]]

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### **Syllable structure and stress processing in visual word recognition**

Nicolás Gutiérrez-Palma, Department of Psychology, University of Jaén  
Michael Shelton, Department of Spanish and French Studies, Department of Cognitive Science, Occidental College, EEUU

Spanish is a quantity-sensitive language, meaning that stress assignment is heavily influenced by syllable structure. In bisyllabic words, final syllables that end in a consonant are considered heavy and usually attract stress. Irregular words that do not follow this rule typically carry an accent mark over the stressed syllable. Arguably, the presence of the accent mark minimizes the processing differences between regular forms, e.g. "ta.piz" (final stress), and irregulars, e.g. "tú.nel" (initial stress). However, some irregular words are not marked in the orthography, e.g. "mi.tin" (initial stress). As these words do not follow the regular pattern, and are also not marked orthographically, they should be more difficult to read than regular or accented words. A lexical decision task comparing words controlled for stress pattern regularity and presence/absence of a written accent mark found this exact pattern. These data suggest the important role of stress processing in visual word recognition.

4:30PM to 6:00PM

### **Lexical competition and masked form priming**

Ignacio Máñez (1),(1) ERI-Lectura, Universitat de València  
Manuel Perea (1)(2),(1) ERI-Lectura, Universitat de València; (2) Departamento de Metodología, Universitat de València

To examine the lexical competition in visual-word recognition, we examined the role of lexical status of orthographically related primes (high-frequency word prime: suelo-SUERO, nonword prime: sueto-SUERO; unrelated prime: cinco-SUE-RO) in a masked priming lexical decision experiment (SOA=50ms). The two orthographically related primes differed from the target in the same letter position (e.g., sueto-suelo-suero). Simulations with the spatial coding model revealed that the model predicted faster lexical decision times for target words when preceded by high-frequency neighbor primes than when preceded by nonword neighbors. In contrast, results in the experiment revealed that lexical decision times to target words were significantly slower when preceded by high-frequency neighbor primes than when preceded by nonword neighbors, while there were no differen-

ces between the high-frequency neighbor condition and the unrelated priming condition. However, words were recognized faster when preceded by nonword neighbors. Thus, present data pose some problems for the current implementation of activation-based models.

4:30PM to 6:00PM

***Can there be syllable effects without syllable representation in Korean? : A connectionist model***

Hee-Jo You, Kichun Nam, Department of Psychology, Korea University, Republic of Korea

Korean is the language which uses syllable as an orthographic notation unit unlike English. Therefore, many Korean researchers have emphasized the syllable, and some studies have argued that there is independently syllable representation or syllable representation is a basic orthographic unit in Korean. Several psycholinguistic effects have been used as the basis of syllable representation. In this situation, this study tried to show that the effects can appear without syllable orthographic representations and the mechanism of the effects through a connectionist model. As the result, the model showed the syllable length effect, syllable frequency effect, and single syllable category difference like the behavior experiments. This result suggested the possibility that there is no orthographic syllable representation in Korean and some additional studies are required for the syllable representation argument.

4:30PM to 6:00PM

***Foveal load and parafoveal processing. An ERP study***

López, P. J., Dampuré, J., H. A. Barber, Universidad de La Laguna

In this experiment we tested if the lexical frequency of a word perceived in the fovea modulates the level of parafoveal word processing. Participants read words presented in triads at the centre of the computer screen. Each word was flanked by two words, in the left and right parafoveal field respectively. Whereas left flankers were always unrelated words, right flankers varied according to three experimental conditions defined by the relationship between the flankers and the central word: a) repeated b) semantically related and c) unrelated words. ERPs to triad presentation showed a larger N400 component for the unrelated compared to the repeated word condition. Interestingly this effect was greater for words with a high lexical frequency presented in the fovea. Differences in the same direction between the unrelated and the semantically related condition did not reach statistical significance. These results suggest that foveal load can constraint parafoveal processing during reading.

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### **Phonological and orthographic contributions to visual word recognition in Grades 3 and 5: Evidence from visual masked priming study**

Karinne Sauval, Séverine Casalis, Laetitia Perre, SCALab-UMR 9193, University of Lille, France

To date, little is known on automatic phonological contribution to familiar visual word recognition (VWR) over the course of development of automatic orthographic lexical access. Indeed, phonological masked priming studies in children are few and findings are inconsistent (Davis, Castles & Iakovidis, 1998; Ziegler, Bertrand, Lété, & Grainger, 2013).

The present study investigated the development of automatic phonological and orthographic contributions to VWR in children. We carried out a masked priming experiment in Grades 3 and 5. There were three priming conditions: a phonological and orthographic condition (e.g., P+O+; ven-VENTRE), an orthographic condition (e.g., P-O+, ven-VENIR) and an unrelated condition (e.g., P-O-)

Results revealed that Grade 3 showed a priming effect only in P+O+ condition whereas Grades 5 showed priming effects in both P+O+ and P-O+ conditions. This result suggests that VWR is mainly based on orthographic-phonological convergence in less advanced readers and on orthographic processing in more advanced readers.

4:30PM to 6:00PM

### **The effect of thematic roles and prosody in the detection of ungrammaticality in Turkish**

Ipek Pinar Bekar, Ozgur Aydin, Ankara University

This study examines the roles of thematic roles and prosody in the detection of ungrammaticality in the context of silent reading by measuring eye movements and pupil dilation. It is claimed that prosodic patterns are imposed on written language during silent reading (Ashby & Clifton, 2005; Rayner & Pollatsek, 1989). This study also tested whether prosodic processing occurs during silent reading. In the experiment, prosodic violation is constructed by using wh-questions of which the answers are located in post-verbal position. To detect ungrammaticality of the sentences with focused post-verbal constituent which is not allowed in Turkish (Göksel, 1998; Özge & Bozşahin, 2010), the parser is incrementally guided by the satisfaction of the thematic role of the verb or the focused post-verbal constituent. Our results suggest that eye movements are sensitive to prosodic processing during silent reading and prosody is more prominent than thematic roles in the detection of ungrammaticality.

Asbhy, J. & Clifton, C. (2005). The prosodic property of lexical stress affects eye movements during silent reading. *Cognition* (96):B89-B100.

Ozge, U. & Bozşahin, C. (2010). Intonation in the grammar of Turkish. *Lingua* (120):132-175.

Göksel, A. (1998). Linearity, focus and the postverbal position in Turkish. In: Jo-



hanson, L. (Ed.), *The Mainz Meeting Proceedings of the Seventh International Conference on Turkish Linguistics*. Harrassowitz Verlag, Wiesbaden, 85-106.

Rayner, K & Pollatsek, A. (1989). *The Psychology of Reading*. Prentice Hall, Englewood Cliffs, NJ.

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***Reading difficulties in children with Specific Language Impairment***

Natalia Jordán Digón, Paz Suárez-Coalla, Fernando Cuetos, University of Oviedo

Studies on specific language impairment (SLI) have shown that those children have serious reading difficulties. The causes of those difficulties could possibly be found in the deficit those children have in phonological processing. The aim of this study was to find the causes of the difficulties children have learning to read and to determine the reading strategies that they use. Participants involved 17 children (ages 7-14) and a control group of the same gender and age. Both groups carried out tasks of reading words and nonwords, lexical decision, and letter identification, manipulating variables of frequency and letter length. The results show letter length and frequency effect in lower ages of both groups, and a decrease of letter length effect only in the higher ages of the control group. These results suggest that the SLI group take longer to progress from the sublexical to the lexical route.

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***Orthographic processing in Korean-English bilinguals***

Dahee Kim, Minjae Cho, Kichun Nam, Department of Psychology, Korea University

This study examined to compare Korean-English bilinguals' L2 and L1 word decoding. Korean uses alphabetic orthography system and it has much more shallow orthographic depth than English. Fifty-eight Korean-English unbalanced bilinguals (mean age: 24.8) participated in 4 tasks: (1) English word naming (whole word level), (2) English rhyme decision (syllable level), (3) English grapheme deletion (phoneme level), and (4) Korean word naming task (L1 word level). The participants showed better performances with every regular word condition than irregular word condition, except for Korean naming task. Specially, the rhyme level performance was the strongest predictor of the English word naming performance. This might be explained by L1 effect because Korean words are processed by syllable units. However, there's no correlation between L1 and L2 word naming, and there is quite a big gap between the participants' L1 and L2 proficiency. From this study, therefore, we could conclude that L2 orthographic process of Korean-English unbalanced bilinguals is different from L1 process.

4:30PM to 6:00PM

***Associations between language switching habits, personality traits, foreign language knowledge, and attentional control***

Daniel Adrover-Roig, Lucía Buil-Legaz, Raül López Penadés, Eva Aguilar-Mediavilla, Balearic Islands University, Department of Applied Pedagogy and Psychology

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We aimed to explore the relationships between personality traits, language switching, L3 knowledge, and attentional control among balanced bilinguals. To do so, we tested 244 young Catalan-Spanish bilinguals in their language switching habits, a self-reported scale of attentional control, five personality traits and an objective measure of L3 (english) lexical knowledge. Results revealed that participants scoring low in Conscientiousness in the NEO-FFI personality inventory switched more frequently to L1 (Catalan) when they could not find the word in Spanish. Furthermore, self-reported attentional control was not related to any of the personality traits and did not correlate with language switching habits. However, participants scoring high in L3 lexical knowledge showed not only lower scores in Neuroticism, but also larger scores in Extraversion, Openness, Agreeableness and Conscientiousness, as compared to participants scoring low in L3 knowledge. Implications of these results are discussed in light of current theories of bilingualism.

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### ***Dimensional and discrete affective norms for 875 words in Spanish***

Natalia Martínez-García, Uxía Fernández-Folgueiras, Irene Rincón, Pablo Rodríguez-Gómez, Universidad Complutense de Madrid

Accumulating evidence indicates that emotional content modulates language processing. However, a debate exists as whether these effects can be better explained by appealing to a two-dimensional (valence-arousal) or a discrete emotional perspective. Thus, appropriate methodological tools are needed that allow researchers to disentangle this question. In this study, 660 Spanish native speakers rated 875 Spanish words for the valence and arousal dimensions on a 9-points scale, as well as the discrete emotional categories of happiness, anger, sadness, fear and disgust. Ratings of concreteness were also collected. Finally, several objective psycholinguistic variables were considered (grammatical class, word frequency and word length). Correlational analyses revealed associations between the affective dimensions and the discrete emotions and also with some of the psycholinguistic variables. Our database expands those corpuses available in Spanish, allowing to design experiments that aim to explore the nature of the influence that the affective content exerts in language processing.

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### ***Emotion Detecting: via language or emoticon? - An ERP Study***

Eunyong, CHUNG, Yunju, NAM, Konkuk University, Korea

In this study, we investigated the effect of “emoticons” on evaluating emotional value of sentences using ERPs technique. We constructed 6 conditions manipulating sentence emotions (Positive/Neutral/Negative) and emoticon emotions (Pleasant/Unpleasant), and 45 counterbalanced sentence-emoticon pairs were included in each condition. All experimental materials were normed using an

emotional judgement task. The results of the ERP experiment, acquired from 30 participants, showed the asymmetry effect between positive and negative sentence condition. When the unpleasant emoticon came up after the positive sentence, only a small anterior positivity effect was elicited at that emoticon. In contrast, N400 was elicited at the pleasant emoticon following the negative sentence compared to same emoticon following positive sentence. This suggested that people tried to integrate the emotional value of emoticon with the emotional value of positive sentence, but they seemed to accept the pleasant emoticon ironically or just ignore it right after the negative sentence processing.

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***Semantic Effects in Recognition of Word Associations***

Daniela Wong Gonzalez, Lori Buchanan, University of Windsor

We explored semantic effects in recognition of newly acquired word associations by looking at encoding conditions and semantic neighborhood density (SND), a measure of how word representations are organized in semantic space (Buchanan et al., 2001). We show that semantic encoding facilitates associative recognition, leading to a higher hit rate and lower false alarm rate when compared to the nonsemantic encoding condition. High SND word pairs produced both higher accuracy and false alarm rates when compared to low SND word pairs. This pattern of high SND advantage in terms of accuracy hit rates and disadvantage in false alarm rates was observed in both encoding conditions. These results indicate that semantic neighborhood density, which captures how words are organized in semantic space, influences how we form novel word associations in the absence of clear semantic relatedness.

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***Is impaired prosody processing at phrase-level in developmental dyslexia?***

Daniel Poyatos Soguero, Gracia Jiménez-Fernández, University of Granada

Nicolás Gutierrez-Palma, University of Jaén

Sylvia Defior, University of Granada

The role of segmental phonology in dyslexia is well established, but the role of suprasegmental phonology has been less widely investigated. Some previous studies in Spanish have shown a deficit in prosodic processing at the word-level, however there are no studies exploring whether there is also a deficit at the phrase-level. The present research tests this second hypothesis by comparing children with dyslexia and good readers on a measure of prosodic processing at the phrase-level. Both groups were matched on age and nonverbal ability. Other control measures were phonological awareness and non-linguistic rhythm. Results showed that Spanish children with dyslexia show impaired prosodic processing at phrase-level and that this deficit is not mediated by control variables as phonemic awareness. These results are discussed in relation to how the prosodic processing deficit could contribute to the understanding of dyslexia.

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### ***The Influence of Partial Transparency and Word Presentation on Compound Words***

Alexandria Stathis, Lori Buchanan, University of Windsor

Compound words are words with multiple constituents that individually have their own meaning and that combine to make another meaning (e.g. doghouse). When these constituents help us infer the meaning of the whole compound word, they are known as transparent constituents (e.g. either constituent of blueberry). In contrast, opaque constituents do not help us infer the meaning of the whole compound word (e.g. moonshine). The current study sought to describe the processing of partially transparent words, in which one constituent relates to the total meaning, whereas the other does not (like strawberry, which is a berry, but not made of straw). Participants were asked to complete a series of lexical decision tasks, whereby reaction times and error rates were measured. The influence of word presentation (e.g. spaced presentation or whole word presentation) was also evaluated. Results provide insight into the relevant semantic weight associated with transparency of heads and modifiers.

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### ***Pseudo relative first-hypothesis in Spanish: a self-paced reading experiment***

Miriam Aguilar, Miriam Oberholzer, Josep Demestre, Pilar Ferré, Universitat Rovira i Virgili

The cross-linguistic variation observed in the resolution of Relative Clause Attachment Ambiguity posits a problem to any principle of locality. Several alternative hypotheses attempted to offer an explanation, none of them being fully satisfactory.

In this study we aimed to test Grillo & Costa's (2014) PR-first Hypothesis, according to which cross-linguistic variation depends on the availability of Pseudo-Relatives (PRs), a particular type of clausal complement. The hypothesis predicts a low attachment preference in all conditions in which RC is the only available reading, and a high attachment preference when PRs are an option.

In order to examine the online effects of PRs availability in Spanish, the type of verb in the matrix clause was manipulated so as to allow a PR reading, or only a RC interpretation. The results of this research will contribute to disentangle the intricate pattern of outcomes found in Spanish, initially considered a high attachment language.

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### ***Individual differences in language comprehension: a behavioral study***

Carolien van den Hazelkamp, Frank Wijnen, Utrecht Institute of Linguistics OTS

Individual differences in the process of understanding language have been reported repeatedly, but most models of language processing do not account for them. We take as a starting point multi-stream models of language processing

that distinguish streams operating on the basis of information from semantic memory or based on combinatorial (morpho-syntactic) features. We hypothesize that the relative dominance of these streams differs between individuals, leading to substantial individual differences. We predict that individuals with a dominant combinatorial stream show faster response times and/or higher accuracy in grammatical judgments and are less affected by semantic-thematic incoherence than people with a dominant semantic-memory based stream. In a self-paced reading experiment we disrupted semantic memory-based processing, using stimuli without meaningful content (syntactic prose). The results showed a systematic relation with performance on a violation detection and a speed-accuracy grammaticality judgment experiment, but this relation is the reverse from the one that we predicted.

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**Visual word recognition and morphological processing: evidence from European Portuguese**

Pinto, Carina, Superior School of Health of Polytechnic Institute of Leiria and CLUL  
Villalva, Alina, Maria Armada Costa, Faculty of Letters of University of Lisbon and CLUL

Using a masked priming paradigm we investigated the effect of a derived word prime on the recognition of a target in 3 conditions: Morphological Related Word (mineiro/carteiro), Orthographically Overlap Word (carteiro/poleiro) and Unrelated Word (mineiro/caneta). Portuguese children in the 4th grade were tested, using a lexical decision task. In a first experiment subjects saw the prime for 50ms (N=36), in a second for 150ms (N=32). First experiment yield unexpected results: significant higher RT in MRW and OOW than in UW ( $p < .002$ ). In the second the longer prime time exposition canceled any effect of the prime-target relation on any condition: despite the time in MRW and OOW be greater than UW, the differences are not significant. Results indicate that: morphological information exert its effects only in the early stages of word processing; there is an inverse effect of priming: a derived word induces costly recognition of a really or apparently derived target.

4:30PM to 6:00PM

**Resolving global attachment- and local ambiguities by native English and bilingual Polish-English speakers**

Marta Ślęzak, University of Wrocław, Poland

The aim of the talk is to present the results of a self-paced reading study as well as of two eye-tracking experiments on resolving global and local ambiguities by native English and bilingual Polish-English speakers.

The experiments: The SPR and the first eye-tracking experiment involve ambiguity attachment preferences in globally ambiguous sentences with relative clauses and prepositional phrases (e.g., Someone shot the servant of the baroness who was on the balcony or The boy hit the man with a gun). The second eye-tracking

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experiment involves the processing of Garden Path sentences with an embedded clause, such as She told me a little white lie will come back to haunt me.

The results: The results reveal preferences in processing such sentences by both groups of participants. Also the obtained reading times, especially in connection with the question of whether being bilingual influences one's speed of processing will be discussed.

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### **Context and interaction: exploring ESL learners' intercultural communicative competence within classroom**

Gan Jingfeng, Sun Yang, Southwest Petroleum University of China

The aim of this paper is to explore the feasibility of developing ESL Learners' intercultural communicative competence (ICC) combining cognition within classroom from the theoretical and applied perspective. "Intercultural" approach to English learning processes has been highly stressed in syllabus for Chinese higher education, but much research is still in need for being lack of insights about the learner's language awareness and the underlying mental mechanism in actual learning environment. This paper intends to investigate the learning process of university students guided by Vygotsky's socially constructed tools in human education, Chevallard's classrooms as situation of various categories of actors and Byram's language-pedagogical model of ICC, thus combine diaries, focus groups and questionnaires for an empirical analysis, that is to consider how context and interaction mediate the intercultural communicative competence of students in the learning process.

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### **Processing of different functional style texts in Russian: evidence from eye-tracking**

Petrova Tatiana, Saint-Petersburg State University

This study is one of the first eye-tracking experiment on Russian language material, checking out if the functional text style is among the readability categories and if it influences the effect of reading perspective. In Experiment participants (30 native speakers of Russian) read three texts on different topics each written in a different functional style. Questionnaires and retelling the texts were additionally used to collect data on text comprehension and accessibility. We suggest that the following eye-tracking data can be informative when we need to evaluate text readability: amplitude of saccades, number of regressions, fixation duration while searching for an answer in the text. The results indicate that the text on the same topic is easier read if it is written in a publicistic style than in a scientific style. There were no significant differences in eye-tracking data between texts written in publicistic style and everyday communication style.

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**Autistic Spectrum Disorder and bilingualism**

Ferran Suai i Lerma, Departament de Psicobiologia. Universitat de València

Negative outcomes had been attributed to bilingualism on the basis that it produce a sort of overload which would confound or damage children's development. Despite a number of empirical evidences against it some professionals in education and medical or psychological care are still skeptic about the positive consequences of bilingualism on cognitive function and -worst of it all- stil recommend parents of children affected by learning-related disorders to avoid bilingualism in rearing and/or formal education. In bilingual (or diglossic) communities, those advices lead children with ASD to be reared in the majority language whilst the rest of the family mostly communicates in the minority language, so producing a sort of double discrimination.

A review of the literature on advantages and disadvantages of bilingual rearing and education of ASD children shows that bilingual education has not evident disadvantages and might even facilitate the acquisition of other behavioral skills.

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**Do multi-colour texts help the reading process?**

Pilar Tejero, Pablo Botella, Ana Marcet, Universitat de València

Bernhard Angele, Bournemouth University

Manuel Perea, Universitat de València

Pinna, Uccula, and Tanca (2010) reported an experiment in which multi-color texts had an advantage over one-colour texts. In their experiment, using a between-subjects design, participants were faster in reading aloud a text on white background when the words written in five alternating colours than when the words were written in one color-always grey. They concluded: "the wholeness and the segmentation among words, induced by color, speed up the reading time when compared with the grey control (p. 592)". One potential limitation of the Pinna et al. experiment is that the obtained differences could be due to the lower contrast of the words written in grey. In our experiment, we employed a more powerful design (i.e., a within-subject design) in which participants read aloud two texts presented on black background. Half of participants read one of the texts with words in different colours, and then other text with words in white, while the other half were presented the same texts in counterbalanced order. After reading each text, participants were presented with six comprehension questions. Results revealed that reading times and comprehension rates were similar in multi-color and one-colour texts. This finding poses some limits to Pinna et al.'s conclusions.

## **Oral Comunications**

**Thursday 3 July, 2015 10:00 to 16:15**

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### **Invited Talk**

#### ***Cognitive and Brain Mechanisms in the Early Stages of Language Learning***

Ruth de Diego-Balaguer, ICREA, Universitat de Barcelona

Given that speech is a sequence of sounds that unfold in time, learning a language from speech requires learning to predict which element (i.e. phoneme, syllable, morpheme, word) will appear and at which specific time and duration. In this talk I will present evidence illustrating how left dorsal and ventral language streams connecting frontal, parietal and temporal regions are engaged to predict what will appear in order to extract Words from speech. In addition to this predictive mechanism tight to audiomotor-integration, electrophysiological evidence will be reviewed showing how changes in temporal orienting of attention are required to track not only words but also the order of dependencies necessary to extract the Rules embedded in speech.

10:00AM to 10:15AM

#### ***An inhibitory influence of transposed letter neighbours on eye movements during reading***

Ascensión Pagán, University of Southampton

Kevin B. Paterson, University of Leicester

Hazel I. Blythe, Simon P. Liversedge, University of Southampton

Previous research shows that prior exposure to a word's substitution-neighbor earlier in the same sentence can disrupt processing of that word, indicating that inter-word lexical priming occurs naturally during reading, due to competition between lexical candidates during word identification. The present research extended these findings by investigating effects of prior exposure to a word's transposed-letter neighbor (TLN) earlier in a sentence. TLNs are constituted from the same letters but in a different order. The findings revealed an inhibitory TLN effect, with longer total reading times for target-words, and increased regressions to prime and target-words, when the target followed a TLN rather than a control word. These findings indicate that prior exposure to a TLN can disrupt word identification during reading. We propose that this is caused by failure of word identification due to the initial misidentification of the target-word (potentially as its TLN) triggering post-lexical checking.

10:15AM to 10:30AM

#### ***Parafoveal semantic processing as a function of cognitive and foveal loads in visual search for words***

Dampuré, J., P. J. López, H. A. Barber, Department of Cognitive Psychology, University of La Laguna, La Laguna, Spain

Previous visual search studies have shown that word meanings in the parafoveal field can guide attention and gaze. The present experiment investigated how cognitive and foveal loads modulate attentional guidance towards semantica-



lly-related target-words. Participants searched for target-words in displays of three-words: one in the center and two in the parafovea (either semantically-related or unrelated). Two different tasks manipulated cognitive load: participants searched for target-words either given in advance (i.e. literal task), or defined by their semantic category (i.e. categorical task). The foveal load was manipulated by varying the lexical frequency of the centered word and its semantic-relatedness with the target. Results showed that in the literal task only, both semantic-relatedness and frequency of the centered word modulated initial gaze duration, as well as which of the parafoveal words was gazed at first. These results indicate that parafoveal word semantic processing is constrained by the availability of cognitive resources.

10:30AM to 10:45AM

***False-positive rates in eyetracking studies with multiple dependent measures***

Titus von der Malsburg, University of California San Diego  
Bernhard Angele, Bournemouth University

A key advantage of using eyetracking in psycholinguistic research on reading behavior is the wealth of data available. The eye movement record is usually summarized in a number of fixation time measures. Unfortunately, analyzing multiple measures requires running multiple statistical tests, which can lead to an inflated alpha rate. In order to get an estimate of the extent of the problem, we performed Monte Carlo simulations of an experiment with two conditions and four fixation time measures (first fixation duration, gaze duration, go-past time, and total viewing time). In our simulations, we set the effect of condition in the population to 0. Despite this, the condition factor reached significance in 12% of our simulations, far exceeding the assumed alpha rate of 5%. Our simulations also show that the Bonferroni correction seems to be an appropriate remedy for this problem.

10:45AM to 11:00AM

***Changes in pupil size as a measure of word recognition: Revisiting some classical effects in Psycholinguistics***

Guasch, M., Haro, J., P. Ferré, Vallès, B., Department of Psychology and CRAMC. Universitat Rovira i Virgili

Pupil size is affected by several factors beyond mere changes in luminance. In fact, pupil dilation has been revealed as a reliable index of processing load on several cognitive tasks, such as problem solving, memory retrieval, etc. The appeal of this measure lies in its automaticity. However, the use of pupillometry in psycholinguistics as a dependent variable to examine word recognition is scarce. To fill this gap, the present work revisits some classical effects on lexical access, by providing both pupillary response and behavioral data in a lexical decision task. Namely, we performed three experiments with a one-factor design exploring, respectively, the effects of word length, word frequency, and concreteness on reaction times and pupillary response. Additionally, the use of this task allowed us

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to explore lexicality effects on pupil size. Results showed that pupillary responses can be used with confidence to examine some of these variables.

11:45AM to 12:00PM

### ***The acquisition of the English dative alternation***

Daniel Bürkle, University of Canterbury

This study investigates the acquisition of the English dative alternation. Recent corpus studies see this alternation as a choice between two ways of ordering the two objects that is guided by more general ordering principles. I expand on this with experimental results from adults and children. The experiment consisted of two tasks designed to investigate how the effects of word length, animacy, and number on the dative alternation develop. The first task used eye-tracking with an interactive visual-world paradigm presented on a touchscreen computer. In the second task, participants were asked to repeat pre-recorded dative sentences, some of which used objects with certain features in the construction that would not be predicted for these features. The elicited repetitions were used to measure the difficulty of these counterpredicted orderings. I discuss new insights into the acquisition of the dative alternation as well as the usefulness of touchscreen input as an attention-measure.

12:00PM to 12:15PM

### ***Processing of in-situ wh-questions in French***

Leticia Pablos, Leiden University Center for Linguistics, Leiden Institute of Brain and Cognition

Jenny Doetjes, Leiden University Center for Linguistics

Lisa L. Cheng, Leiden University Center for Linguistics, Leiden Institute of Brain and Cognition

Previous research investigated the processing of wh-in-situ questions in Mandarin, a language with only one question-strategy (Xiang et al., 2013; 2014). Little is known about how wh-in-situ questions are processed without prosodic information in languages with more than one question strategies (i.e. French fronted & in-situ). Our study examined the processing of two types of wh-in-situ questions in French: (1) Discourse-linked (quel-x) and (2) non-Discourse-linked (qui), as in *Le braqueur de banque a blessé qui/quelle caissière dans sa fuite?* We investigated 1) whether in-situ questions without prosodic information are processed similarly or slower to their declarative counterparts; 2) whether a D-linked vs. non-D-linked question word makes a difference within this comparison. Results from two word-by-word self-paced reading experiments show that though both question types are processed slower than their declarative counterparts, in D-linked questions, the RT difference is not significant until the whole wh-phrase is processed.

12:15PM to 12:30PM

***Child- and stimulus-related variables associated with single word spelling in English- and Greek-speaking monolingual and bilingual children***

Georgia Z Niolaki, Coventry University  
Aris R Terzopoulos, University of Dundee  
Jackie Masterson, UCL Institute of Education

The study involved an investigation of variables associated with single word spelling in 7- and 9-year-old monolingual and bilingual English- and Greek-speaking children. Children were administered assessments of phonological and visual memory. Results revealed the importance of phonological and visual memory for young English-speaking children. However, for young Greek-speaking children only phonological memory was important, in accordance with the characteristics of the transparent Greek orthography. For older English and Greek monolingual children only visual memory, and not phonological memory, was strongly associated with single word spelling, indicating that as children get older whole word recognition skills are more important for single word spelling in both orthographies. The results were also supported by the stimulus-related analyses. Findings suggest that spelling processes do not greatly differ between the orthographies and they also support transfer of spelling processes from first language to second language and are in accordance with other cross-linguistic studies.

12:30PM to 12:45PM

***Do all verbs mind animate objects? ERP evidence for different influences of animacy on morphologically simple and complex verbs***

Czypionka, Anna, Eulitz, Carsten, Department of Linguistics, Constance University (D)

In sentence comprehension, animacy contrasts are used in subject-object-disambiguation: Sentences with two animate arguments are more difficult to process than sentences with animate subjects and inanimate objects.

In case-marking languages like German, this use of animacy contrasts is modulated by verbal case-marking pattern: Animacy effects are weaker for canonical case-marking verbs than for noncanonical case-marking verbs.

We present the results of two ERP studies on German sentence comprehension, comparing the interaction between animacy contrast and case-marking pattern for two verb classes: Morphologically simple verbs and complex verbs with separable particles. Simple verbs show interactions between animacy contrast and case-marking. Particle verbs, however, show only animacy effects and no interactions with case-marking.

Our findings suggest that the different uses of animacy contrasts depend on syntactic and lexical differences between canonical and noncanonical case-marking verbs, rather than on systematic differences in meaning correlated with case-marking patterns.

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12:45PM to 1:00PM

### ***The role of count/mass distinction in article acquisition by L2 English learners: A psycholinguistic study***

Elena Gavrusseva, Linguistics Department, University of Iowa

This paper investigates what role the count/mass distinction plays in adult second language (L2) acquisition of English articles. Prior L2 studies (e.g. Ionin et al. 2004, Sarko 2009) identify English determiner errors that include only [+count] nouns and articles 'a' and 'the'. We therefore ask what patterns are expected with [-count] nouns modified by a null article ('I like cold weather'). We present the results of an online task asking 62 L2 learners of Slavic (article-free) background to choose the appropriate determiner for a sentence embedded in a dialogue (48 test items [24 count/24 mass nouns]; 40 distractors). Qualtrics software allowed us to time the learners' responses (e.g. first click). The control group included 16 native English speakers. We found differences in accuracy/timing rates by noun type (overall higher for count than for mass nouns) and by learner group: at chance for the null and definite determiners for intermediate-level learners.

1:00PM to 1:15PM

### ***Lexically-driven perceptual learning of foreign-accented speech: An ERP investigation***

Carlos Romero-Rivas, Center for Brain and Cognition, Universitat Pompeu Fabra (Barcelona, Spain)

Clara D. Martin, Basque Center on Cognition, Brain and Language (San Sebastián, Spain)

Albert Costa, Center for Brain and Cognition, Universitat Pompeu Fabra (Barcelona, Spain)

This study investigates the mechanisms responsible for fast changes in processing foreign-accented speech. Event-related brain potentials were obtained while native speakers of Spanish listened to native and foreign-accented speakers of Spanish. We observed a less positive P200 component for foreign-accented speech relative to native speech comprehension. This suggests that the extraction of spectral information and other important acoustic features was hampered during foreign-accented speech comprehension. However, the amplitude of the N400 component for foreign-accented speech comprehension decreased across the experiment, suggesting the use of a higher level, lexical mechanism. Furthermore, during native speech comprehension, semantic violations in the critical words elicited an N400 effect followed by a late positivity. During foreign-accented speech comprehension, semantic violations only elicited an N400 effect. Overall, our results suggest that, despite a lack of improvement in phonetic discrimination, native listeners experience changes at lexical-semantic levels of processing after brief exposure to foreign-accented speech.

3:00PM to 3:15PM

***The effects of contextual diversity and word frequency on serial recall performance***

Fabrice B. R. Parmentier, University of the Balearic Islands  
Montserrat Comesaña, Ana Paula Soares, University of Minho

Serial recall performance is mediated by a number of factors such as word frequency, length, concreteness, but there has been as yet no examination of the impact of contextual diversity. Contextual diversity is defined as the number of different contexts in which a word appears within a corpus. Recent work shows that it constitutes the best predictor of reading performance and that it mediates the access to lexical items in memory. Furthermore, controlling for contextual diversity can cancel out the effect of word frequency in lexical decision tasks and attenuate it in word recognition and reading tasks. In the present study, we report the first independent manipulation of contextual diversity and word frequency in a serial recall task. We found greater recall performance for words of low contextual diversity (when word frequency is controlled for) and for high frequency words (when contextual diversity is controlled for). Both effects affected omissions and item errors, while word frequency also affected order errors. We argue that words of high contextual diversity may be less well recalled because the retrieval of these words in their episodic context is interfered with by the existence of many associations to competing contexts in long-term memory.

3:15PM to 3:30PM

***Lysergic acid diethylamide increases same-category naming errors***

Neiloufar Family, University of Kaiserslautern  
David Vinson, University College London  
Mendel Kaelen, Mark Bolstridge, Imperial College London

We explored changes in semantic context effects in a single-blind, placebo-controlled pilot study with lysergic acid diethylamide (LSD), a molecule with high affinity to the serotonin-2A receptor. Spitzer et al. (1996) showed that psilocybin, a related molecule, increases indirect semantic priming and suggested enhanced semantic network activation in the drug condition. In the current study, ten healthy participants named pictures in blocks of far, near, and same semantic categories (Vigliocco et al., 2002). We measured mean speech onset times and error rates in the three categories. Results reveal increased reaction times for the near category, but this effect did not reach significance. However, a significant increase in same-category errors for the LSD condition indicates a breakdown of self-monitoring, suggesting that LSD modulates access to semantically related items. We discuss these results in light of current debates in language production concerning the locus of semantic effects (e.g. Dhooge et al., 2013).

**Oral Comunications**

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3:30PM to 3:45PM

**Numbers within words: Automatic processing of number quantity in leet words**

Javier García-Orza, Numerical Cognition Lab. Universidad de Málaga, Málaga, Spain

Montserrat Comesaña, Human Research Lab, CIPsi. School of Psychology, University of Minho, Portugal

Manuel Perea, Departamento de Metodología, Universitat de València, Valencia, Spain

Ana Piñeiro, Faculty of Psychology, University del Norte (Barranquilla, Colombia)

Previous research revealed that “leet” words (e.g., MAT3RIAL) provide automatic access to lexical/semantic representations. However, it remains unclear whether the digits inserted in leet words are simply processed as letters or whether their quantity representation is also accessed. Two experiments examined this question using a numerical Stroop paradigm. Participants were presented with pairs of leet words (e.g., MAT3RIAL-MATERI4L) and had to decide which of the words appeared in a bigger font. Experiment 1 explored the congruity effect (congruent: MATERI4L bigger than MAT3RIAL; incongruent: MAT3RIAL bigger than MATERI4L; neutral: MAT3RIAL bigger than MAT3RIAL) and the numerical distance effect (distance 1: MATERI4L-MAT3RIAL; distance 4: CONCR3TO-CONCRE7O). To ascertain that the meaning of leet words was also accessed in this paradigm, we also manipulated word-frequency in Experiment 2. Results reflected effects of congruency, numerical distance, and word-frequency. Therefore, the digits embedded in leet words can be automatically processed as numbers.

3:45PM to 4:00PM

**Creating visual representations in Alzheimer's disease**

María González-Nosti, Carmen Martínez Rodríguez, Fernando Cuetos, University of Oviedo

In recent years, several studies have attempted to track the transition from a sub-lexical to a lexical reading and the creation of new representations of words in the visual lexicon. This issue becomes especially interesting in Alzheimer's demented patients because, although reading processes remain relatively intact until advanced stages, the acquisition of new information is greatly affected since the beginning of the disease. Twenty healthy elderly and 20 EA patients were selected and evaluated through various reading tasks in which short and long very low frequency words were presented. Initial reaction times were compared to those obtained after 6 presentations; the evolution of the length effect was also examined, since its disappearance would be indicative of the formation of new lexical entries for the experimental stimuli.

4:00PM to 4:15PM

***The value of multi-sensory coding and short-term memory training to improve the reading and spelling abilities of second language learners with specific learning impairments in South Africa***

Annalene van Staden, Ansa Tolmie, Psychology of Education, University of the Free State

In the current study the researchers hypothesised that the same underlying cognitive linguistic factors underlying the attainment of first-language reading and spelling might also play an important role in the reading and spelling development of elementary phase second language learners with specific learning impairments. Employing an experimental pre-test post-test research design, we implemented an intervention programme that focused on enhancing experimental children's (n =12) short-term memories and literacy skills. In addition the intervention programme utilised their visual-aural, visual-written; aural-oral and aural-written skills to memorise and recall different colour, number and sound digits and ultimately words, which also contributed to enhancing their short term memory skills. Results have shown that after six months of short-term memory practice, multi-sensory coding and early literacy skills training, children in the experimental group significantly outperformed children in the control group with regard to short-term memory, sound knowledge, phonological awareness, word reading and spelling.

Keywords: Short-term memory; multi-sensory coding; second language learners; specific learning impairments.

4:15PM to 4:30PM

***Why do children misread similar words? The role of letter identity and letter position in Spanish developing readers, evidence with skilled and dyslexic children***

Joana Acha, Andone Sistiaga, Universidad del País Vasco UPV/EHU

Javier S. Sainz, Universidad Complutense de Madrid

Miguel Lázaro, Universidad de Castilla la Mancha

Precise reading implies a lexicon with well specified orthographic representations. These are formed by identifying letters and their positions exhaustively across words. We examined the efficiency of identity and position coding processes in normal developing and dyslexic children of 2nd, 4th and 6th grade. Children read aloud words that had either higher frequency substitution (the word "litro" has the neighbor "libro") or transposition neighbors (the word "calvo" has the neighbor "calvo"), together with control words that had no higher frequency neighbor. All children named words with higher frequency neighbors faster than words without neighbors, but with many misreading errors, particularly in the case of words with transposition neighbors. These findings support a coarsely tuned orthographic representational system in childhood, as well as a different specification of letter identity and letter position during the acquisition of orthographic knowledge

## Posters

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4:30PM to 6:00PM

### ***The influence of early semantic capacity over reading comprehension in SLI***

Lucía Buil-Legaz, Eva Aguilar-Mediavilla, Universitat de les Illes Balears  
Javier Rodríguez-Ferreiro, Universitat de Barcelona

The development of literacy in children with SLI is still poorly understood. We present a study assessing reading skills of 19 Spanish-Catalan children with Specific Language Impairment (SLI) relative to a sample of 16 age-matched control children. Reading acquisition measures (PROLEC test) were collected at 8 and 12 years old and related with early oral language acquisition data gathered at age 6. Children with SLI presented impaired decoding and comprehension skills at age 8, showing difficulties in all the assessed tasks. However, only text comprehension difficulties persisted at age 12. The SLI group comprehension abilities were predicted by their semantic fluency at age 6. Our results highlight the relevance of early semantic abilities over the later acquisition of reading skills.

4:30PM to 6:00PM

### ***Emotional Sound Symbolism: how German Angst reverberates on the Canary Islands***

Markus Conrad, Adan Mesa Dominguez, Universidad de La Laguna  
Arash Aryani, Freie Universität Berlin  
Enrique Meseguer Felip, Universidad de La Laguna

Large-scale databases of German and Spanish feature certain phoneme clusters occurring more often in words with specific emotional connotations. We address the question of whether respective sound-meaning correspondences from one language (German) represent some kind of cross-linguistic phonology-emotion relationship.

We presented two sets of "monolingual" participants (a) German; b) Spanish, unfamiliar with German) with German words involving an orthogonal manipulation of semantic-emotion-content and sublexical-emotional-characteristics. Both groups of participants evaluated the emotional appeal of auditorily presented stimuli.

Whereas German participants showed effects of semantic and sublexical emotion-content manipulations, Spanish participants displayed no semantic effects but apparent sensitivity to sound-meaning correspondences within the German database: German words comprising "high arousing" sounds were rated as especially arousing by both participant groups.

We conclude that the organization of modern languages follows - at least to some extent - internal relationships between phonology and emotional attributes of meaning that possess psychological reality even across linguistic boundaries.



4:30PM to 6:00PM

***Ambiguity advantage depends on how ambiguous words are classified: subjective norms vs dictionary approaches***

J. Haro, Ferré, P., R. Boada, J. Demestre, Department of Psychology and CRAMC

A consistent finding in past research about ambiguity was that ambiguous words are recognized faster than unambiguous words. However, Rodd et al. (2002) observed an ambiguity advantage for polysemous words (ambiguous words with related meanings), but not for homonymous words (ambiguous words with unrelated meanings). Thus, Rodd et al. concluded that the ambiguity advantage is caused exclusively by polysemous words. In order to test this proposal, we conducted three lexical decision experiments. In Experiment 1 we classified ambiguous words using a dictionary approach, obtaining the same results as Rodd et al. In contrast, in Experiments 2 and 3, we used subjective norms to classify ambiguous words and we observed an advantage for both polysemous and homonymous words. Our results suggest that the approach used for classifying ambiguous words is crucial for the ambiguity advantage. These findings have relevant implications for our understanding of the processing of semantic ambiguity.

4:30PM to 6:00PM

***Pleasant pictures decrease the likelihood of experiencing a tip-of-the-tongue (TOT) state***

Isabel Fraga Carou, Universidade de Santiago de Compostela  
Montserrat Comesaña Vila, Universidade do Minho  
Noelia Gamallo Mesías, Isabel Padrón Rodríguez, Universidade de Santiago de Compostela

Models of language production account for the tip-of-the-tongue (TOT) state as a failure in the language production system caused by unconscious processes, but they are also conscious experiences involving emotion. Recently, Schwartz (2010) found that emotional questions induced higher TOT rates than neutral ones. However, D'Angelo and Humphreys (2012) failed to replicate these findings. The aim of the present experiment was to further explore this issue by studying TOT induction and resolution using a picture-naming paradigm. We employed three experimental conditions: unpleasant, neutral and pleasant pictures. These three conditions were carefully matched in a number of relevant factors for both pictures and depicted words.

Results revealed that pleasant pictures induced fewer TOTs than unpleasant pictures, whereas no differences were observed in TOT resolution. These results can be explained as an interplay between nonlinguistic and linguistic information throughout the language production process.

## Posters

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4:30PM to 6:00PM

### **Are comprehension-elicited lexical predictions specified at a phonological level within the speech production system?**

Eleanor Drake, University of Edinburgh, Department of Psychology

Sonja Schaeffler, Queen Margaret University, Edinburgh, CASL

Martin Corley, University of Edinburgh, Department of Psychology

The generation of comprehension-induced predictions affects both the timing and articulatory realization of spoken output (e.g., Drake, Schaeffler, & Corley, 2014). The current study investigates whether these effects are predicated on the phonological relationship between a predicted word and a picture-name. We elicited lexical predictions by acoustically presenting sentence-stems. Pictures were named in 4 conditions: match (picture-name fully matched the lexical prediction), onset-overlap (e.g., can-CAP), rime-overlap (e.g., can-TAN), and a control condition (acontextual picture naming). Articulation was captured via ultrasound tongue imaging. Articulatory patterns during the response latency period differed according to whether the picture-name matched the lexical prediction or not, but not according to the phonological relationship between the picture-name and the lexical prediction (i.e., onset-overlap did not differ from rime-overlap). This suggests that the speech-motor consequences of comprehension-elicited predictions may reflect generalized mismatch monitoring processes rather than the activation of fully-specified predictions within the speech production system.

4:30PM to 6:00PM

### **Linguistic skills and social participation in elderly people. Results from ELES study.**

Nuria Calet, Cristina Dumitrache, University of Granada

Ian C. Simpson, Loyola University Andalusia

Social participation is a protective factor in elderly people with one possible explanation for this being that suggested that given that it may play an useful role in the prevention and management of chronic conditions and in fostering well-being. In this context linguistic skills were studied as a possible factor that may influence social participation. Therefore, this study analyze the influence of linguistic skills (semantic and phonological fluency) in social participation in elderly people controlling for age. Data were taken from the pilot study of the Spanish Longitudinal Study of Ageing (ELES) which comprised a representative sample of 1747 non-institutionalized Spanish older people. Data on general cognitive functioning, semantic fluency, phonological fluency, as well as social support and social satisfaction were collected. Results of the multiple regression analyses showed that semantic fluency and phonological fluency make different contributions to social participation. Implications for assessment and treatment are discussed.

4:30PM to 6:00PM

***Oscillatory dynamics of agreement features in Turkish***

Mehmet Aygüneş, Department of Linguistics, Istanbul University

Özgür Aydın, Department of Linguistics, Ankara University

Tamer Demiralp, Hulusi Behçet Life Senses Research Center, Istanbul University

The aim of this study is to investigate how the processing of Person and Number feature in Turkish could differ across the 1-30Hz time-frequency bands. Thirty three volunteers participated in the experiment. The material consisted of 150 sentences divided into three experimental conditions (Grammatical, Person Mismatch [PM], Number Mismatch [NM] sentences). EEG was recorded from 30 scalp locations according to the 10/20 system. Continuous wavelet transform with complex Morlet basis function was applied for time-frequency analysis. The evoked activity (phase-locked) was computed by averaging the absolute values of the wavelet transforms of single trials. ERP analyses showed that PM elicited greater negativity (N400) and positivity (P600) than NM. In the time-frequency analysis, the evoked delta and theta amplitude in PM are significantly larger than those in NM. These results reveal that Person and Number features process differently, in which case delta and theta band powers play crucial role.

4:30PM to 6:00PM

***Influence of semantic knowledge in the formation of new orthographic representations: an ERP study***

Beatriz Bermúdez-Margaretto, University of Oviedo

Alberto Domínguez, University of La Laguna

Fernando Cuetos, University of Oviedo

The emergence of orthographic representations occurs as a result of visual repeated exposure to words. After reading several times a new word, the reader ends up forming an orthographic representation. However, the advantage of semantic knowledge in this process, compared to solely orthographic knowledge, is undetermined. To answer this question, 24 students performed a reading task while electrophysiological activity was recorded. The task consisted of six blocks with 128 stimuli on each, including 64 words and 64 pseudowords (the same pseudowords repeated across blocks). Half the stimuli were preceded by a picture as semantic information (visual and semantic condition training) and the other half were preceded by an arbitrary symbol (visual training condition). Among main findings, highlight the increasing differences along the task between pseudowords trained by both procedures in P400, a component related to integration processes in brain. The combined training caused greater increase in pseudoword amplitude across blocks than solely visual training, indicating a greater integration of orthographic and semantic knowledge in these stimuli and therefore, deeper processing that enables the emergence of representations.

## Posters

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4:30PM to 6:00PM

### **An ERP investigation of lexico-semantic access in bilinguals engaged in a language-specific context**

Stéphanie Massol (1), Nicola Molinaro (1), Jon Andoni Duñabeitia (1), Manuel Carreiras (1)(2)(1) BCBL. Basque Center on Cognition, Brain and Language, Donostia-San Sebastian, Spain, (2) IKERBASQUE, Basque Foundation for Science, Bilbao, Spain

This ERP study investigated the similarities and differences between bilinguals' activation of within-and between-language lexico-semantic representations in a language-specific context. Balanced and unbalanced Spanish-Basque bilinguals completed a picture-word matching task. The critical items were pseudowords derived from a set of Spanish and Basque words that could be either related or unrelated to the preceded picture (e.g., the picture of a dog followed by "puro" derived from "perro"). Behavioral results showed a larger relatedness effect for within-language pseudowords than for between-language pseudowords. In the N400 time-window, a generalized effect of relatedness was found, with even a larger effect for within-language pseudowords. However, when the language context was the non-dominant language of the participants, similar relatedness effects were found for both types of pseudowords. Overall, these results highlighted that the language context modulates the strength of bilingual lexical access, but also that the language dominance of the participants modulates the lexico-semantic activation.

4:30PM to 6:00PM

### **Developmental differences between frequency effects in L1 and L2 German speaking children**

Pauline Schröter, Sascha Schroeder, Max Planck Institute for Human Development

Research on bilingualism has demonstrated that the word frequency effect is stronger in bilinguals' L2 compared to their L1. Within the frame of the "Developmental Lexicon Project", we investigated the development of the frequency effect by comparing L1 and L2 German speaking elementary school children in their performance on a lexical decision task. Whereas in grades 1 and 2 the frequency effect did not differ between groups, it was more pronounced for L2 speakers in grades 3 to 6. This interaction was mainly driven by a selective speed-up in L1 speakers for words in the lower frequency range. We interpret this finding in terms of the lexical entrenchment hypothesis, which assumes that lexical memory representations are usage-based and become stronger over time. As a result, L2 speakers' processing of words that are used more often improves while they still lag behind their peers in their performance on lower frequency words.

4:30PM to 6:00PM

### **Inferential processes in children. Elaborative inferences generation.**

Casajús, Andrea, Universidad de Buenos Aires

Zunino, Gabriela Mariel, Universidad de Buenos Aires - Consejo Nacional de In-

investigaciones Científicas y Técnicas

Mantiñan, Nancy, Saslavsky, Daniela, Hospital Güemes

Inferences are generated in a constructive process that links direct information explicit from the text with world knowledge stored in semantic memory (Belinchon et al, 1998) There is research showing that young children are able to draw inferences based on the semantic content of the text and prior knowledge (Orsolini et al, 1986).

The aim of this study was to analyze the generation of elaborative inferences in a group of children. This study involved 30 children between 5 and 9 years. The children were assessed with a test designed for the purpose of inferences generation. The test consisted of reading passages and questions aimed at generating elaborative inferences.

The children made use of textual information and relied on their prior knowledge for the generation of elaborative inferences.

4:30PM to 6:00PM

***I saw this somewhere else: the Spanish ambiguous words (SAW) database***

Montserrat Comesaña, Human Cognition Lab, CIPsi, School of Psychology, University of Minho, Braga, Portugal

Isabel Fraga, Cognitive Processes & Behavior Research Group, Department of Social Psychology, Basic Psychology, and Methodology, University of Santiago de Compostela, Santiago de Compostela, Spain

Isabel Padrón, Cognitive Processes & Behavior Research Group, University of Santiago de Compostela, Santiago de Compostela, Spain

Manuel Perea, Departamento de Metodología and ERI-Lectura, Universitat de València, València, Spain

The present paper introduces the Spanish Ambiguous Words (SAW) database for 210 nouns (133 polysemous and 77 homonymous) with different number of senses (NoS). Word meanings and senses were collected by using a meaning retrieval task. Three-hundred and fifteen Spanish university students (263 females, Mage = 21.97; SD = 3.98) participated in the study. In a second stage, there was a subsequent RAE's dictionary validation. While there is a relatively high relationship between the NoS included in dictionary and those provided by the participants ( $r = .62$ ), regression analyses on lexical decision and naming times revealed a sizeable predictive power of the participants' NoS, but not of the dictionary NoS. Thus, the normative data from participants seems to reflect better the psychological reality of a word's senses. In sum, the SAW database is a useful tool for researchers interested in the organization and access of the mental lexicon.

## **Posters**

**Thursday 3 July, 2015 16:30 to 18:00**

4:30PM to 6:00PM

### ***Cross linguistic influences in L3 phonetics***

Dr. Marina J. Sokolova, Nizhny Novgorod Linguistics University, Russia

The present study investigates acoustic differences in the production of the English nasal velar [Ń] by Russian intermediate learners of English and Russian advanced learners of German and French who are learning English as a third language (L3). Twenty subjects were recorded and the system Praat was used for acoustic analysis.

The results show positive effects of both German and French on L3 phonetics. Both L3 English groups produce the target sound. The results are different in Russian-English learners. Instead of the nasal velar sound they produce a nasal alveolar [n] which is close to the Russian denti-alveolar [ɲ].

The positive effect of the L2s on L3 follows the lines of the Typological Primacy Model (Rothman, 2010) for the initial stage of learning. L3 learners transfer from both German and French which are more phonologically similar to their L3 than Russian.

4:30PM to 6:00PM

### ***Syllable processing at the vowel boundary***

Nicolás Gutiérrez-Palma, Department of Psychology, University of Jaén, Spain  
Michael Shelton, Department of Spanish and French Studies, Department of Cognitive Science, Occidental College, EEUU

Syllable structure in written Spanish is generally transparent. However, ambiguities arise when readers confront certain two-vowel sequences, because they must be parsed as either a monosyllabic diphthong ("miel", [mjel]) or two vowels in hiatus ("país", [pa.is]). The proper syllabification is indicated in the orthography by means of an accent mark, which also identifies stress placement. Stressing the high vowel, as in "país", marks hiatus. No accent mark, as in "miel", indicates a diphthong. Arguably, readers should take longer to recognize such words, given the ambiguous syllabification of the two vowels. This study tests this hypothesis using a lexical decision task, comparing words with diphthongs, hiatus, and single-vowel controls ("flor"). Words were matched for relevant variables, including lexical, syllable, and bigram frequencies. As predicted, words with diphthongs and hiatus proved more difficult than control items. This result suggests a close relationship between the processing of syllabification and stress placement in Spanish.

4:30PM to 6:00PM

### ***Linguistic comprehension and production of causal and counter-causal relations: type of connective and formal education effects***

Gabriela Mariel Zunino, Universidad de Buenos Aires (UBA) - Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)

As part of a larger experimental psycholinguistic research, on this occasion, we will present the results of two experiments designed specifically to study the comprehension and production of causal and counter-causal relationships in Spanish. Both experiments were conducted within a behavioral paradigm with reaction time and accuracy measures in two groups of subjects organized by level of formal education. For each relationship type (causal and counter-causal), two conditions were presented according to the connective that serves as explicit semantic instruction: "then" and "because" for causal relations; "but" and "although" for counter-causal relations.

Our results indicate that: 1) the causal advantage is exhibited in both experiments and both groups of subjects if not through accuracy through reaction times; 2) this causal advantage is most noticeable in the low education group; 3) for causal relationships, a greater facility to produce missing consequences was exhibited, thus a different effect from the one found during the comprehension of this type of semantic relations.

4:30PM to 6:00PM

***Lexical access and automaticity in bilingual and monolingual speakers***

Kristina Vujnovic Malivuk, Language and Cognitive Neuroscience, University of Zagreb

Marijan Palmović, ERF, University of Zagreb

According to executive control models, bilingual language production is under the influence of language control mechanisms activated during speech production. The present study aims to investigate lexical access in bilinguals and monolinguals while taking into consideration their automaticity of this process. We tested three groups of high school children: Croatian German early bilinguals, Croatian native speakers enrolled in a German immersion programme and Croatian monolinguals. We tested the participants on a modified version of the Stroop test in which they were presented with pictures of an animal or an object with names of an animal or an object written over the picture. The names of the objects and animals were written in one of the two languages, Croatian or German, and were either congruent or incongruent. Bilinguals were overall slower in lexical access in both languages which suggests that automatic processing in both languages engaged more of their cognitive resources.

4:30PM to 6:00PM

***Brain potentials of prosody-syntax interaction in Turkish***

Ipek Pinar Bekar, Ozgur Aydin, Iclal Ergenc, Canan Kalaycioglu, Ankara University

Using event-related potentials, this study provides neurophysiologic evidence for a prosody-syntax interaction in Turkish post-verbal position. Our sample group was composed of 18 Turkish participants between ages of 18-35 from Ankara University. Experimental material (300 sentences) was contained two prosodic-syntactic violations. For prosodic manipulation, the critical word intoned as

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focused in post-verbal position (non-focused position in Turkish). For the syntactic manipulation, case marking effect was violated by accusative form (correct) vs. dative form (incorrect). For main effect of syntax, a broadly distributed left negativity and late positivity (P600) observed at critical word (200-400 msec and 550-750 msec). For pure prosodic effect, a right anterior negativity (RAN) was elicited in an early time window (150-350 msec). For the interaction, left negativity and left positivity was seen more smaller when syntax was violated by prosody. This suggests that an immediate influence of post-verbal non-focusing position in Turkish during auditory sentence comprehension.

4:30PM to 6:00PM

### ***Who did what to whom? The effects of implicit verb causality and directionality on prediction***

Carlos Romero-Rivas, Xavier García, Albert Costa, Center for Brain and Cognition, Universitat Pompeu Fabra (Barcelona, Spain)

In this study we examine the interaction between the implicit causality associated with specific interpersonal verbs and the establishment of referents in the discourse. Event-related brain potentials were recorded while native speakers of English read sentences which could include a congruent pronoun (Tony apologized to Anne because he...), an incongruent pronoun (Tony apologized to Anne because she...), or an ambiguous pronoun (Tony apologized to Charles because he...). We observed an interaction between the overall increased activation of the first noun over the second noun and the causal directionality contained in the meanings of the verbs. Verbs that direct attention to the first noun produced a P600 effect for incongruent and ambiguous pronouns. However, verbs that direct attention to the second noun only produced a P600 effect for ambiguous pronouns. These results suggest that implicit causality information provided by interpersonal verbs affects the way that readers anticipate upcoming information.

4:30PM to 6:00PM

### ***The role of semantics and phonology on development of orthographic representations***

Marta Álvarez Cañizo, Paz Suárez-Coalla, Fernando Cuetos Vega, University of Oviedo

Reading through the lexical route requires access to orthographic representations of words. However, there could be differences marked by the existence of previous phonological representations and semantic information. The aim of this study was to know how previous phonological and semantic information of a word influences the formation of its orthographic representation. The study was conducted with children in the third and fifth grades. First, they heard a text that included eight obscure words allowing them to know the meanings; later, they read aloud these words repeatedly in order to know the moment they formed orthographic representations. Results showed that children needed few exposures to form them when they had phonological and semantic information of words.



This was seen by the decrease in length effect. In first exposures, children used the sublexical route, influenced by length; when they used the lexical route, length did not matter. These results indicate the important role of phonology and semantics in forming orthographic representations.

4:30PM to 6:00PM

***A shared spatial representation for pitch and movement verbs***

Rodríguez Cuadrado, Sara, Puigcerver, Laura, Gómez-Tapia, Víctor, Navarra, Jordi, Fundació Sant Joan de Déu, Parc Sanitari Sant Joan de Déu

High- and low-pitched tones are associated with upper and down spatial locations, respectively. In the current study, we explore whether this perceptual correspondence between space and pitch share spatial-based representations with language. Verbs with upward (e.g.: "climb"), downward (e.g.: "fall") or spatially neutral connotations (e.g.: "talk") were presented. Participants performed a lexical decision task in which they decided whether strings of letters formed a word of a pseudo-word. Previous to the presentation of the word (verb), an ascending (low-to-high) or descending (high-to-low) frequency sweep was presented auditorily, under the hypothesis that the spatial encoding of frequency sweeps would influence the connotative representation of the verbs. The results showed that frequency sweeps influenced language processing, as verbs conveying spatial information were processed slower than neutral words. This pattern of results suggests that both verbs with upward and downward connotations and frequency sweeps may share "spatial-based" representational resources.

4:30PM to 6:00PM

***The influence of language combination and proficiency on bilingual lexical access***

Jessica Kastenbaum, Swathi Kiran, Sofia Vallila Rohter, Boston University  
Elizabeth D. Pena, University of Texas at Austin

The present study examines the nature of bilingual lexical access across five language combinations: Hindi-English, Kannada-English, Mandarin-English, Spanish-English, and Turkish-English. All participants completed a category fluency task in each of their languages in three main categories, each with two subcategories, as well as a questionnaire assessing their proficiency in each of their languages. Multivariate analyses of variance revealed that the number of correct items named across the three main categories varied across the different language combinations for English items, but not for the same task in speakers' other language. Regression analyses showed that the amount of exposure participants had to each of their languages and their confidence in each language predicted the number of correct items they produced in English only. These results demonstrate the effects of particular languages on bilingual lexical access and provide insight into the role of proficiency and degree of bilingualism on access.

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### **Anomia rehabilitation from a pragmatic-functional paradigm: a case study**

Vicent Rosell-Clari, Carlos Hernández-Sacristán, Universitat de València

An anomia therapy program based on a functional pragmatic paradigm is presented and discussed here, as illustrated in a case study. This approach conceives language as an open system establishing a multimodal interface with other cognitive abilities, which is manifested mainly in natural contexts. The case presented here is a woman of 70 years of age, who was diagnosed as having moderate mixed aphasia according to BDAE. A treatment was administered focusing on improving metalinguistic skills as defined in the MetAphAs protocol (Rosell-Clari and Hernández-Sacristán, 2014), for a period of eight months. After treatment, the individual had positively evolved in the use of language within natural contexts, although retaining a slight anomia. The results obtained when comparing the MetAphAs test before and after treatment are statistically significant. In conclusion, therapeutic techniques based on a pragmatic-functional paradigm can be useful for recovering communication skills in natural contexts.

4:30PM to 6:00PM

### **Theory of Mind and language: Application of the Metalinguistic Skills Stimulation Program in people with dementia**

Beatriz Valles-González, La Universidad del Zulia

Vicent Rosell-Clari, Universitat de València

Aims: To evaluate the application of "The Metalinguistic Skills Stimulation Program in Theory of Mind for people with dementia". Sample: The participants were 42 people with dementia aged between 61 and 87, classified in three groups: Experimental and Control (both with people with dementia) and Normal (people without dementia who did not receive any treatment). Method: All participants were evaluated using the MMSE30 and the MetAphAs. The program was used with the Experimental Group during five months. A second assessment was carried out with the test MetAphAs. The results obtained were analysed qualitatively and statistically. Results: a clear effect of the treatment was observed. There were significant differences when comparing the Experimental Group with the Control Group. Conclusions: The evolution of each patient is influenced by a number of factors. The results encourage further research.

4:30PM to 6:00PM

### **A recursively-defined parsing model of self-embedded and coordinate structures**

Sergio Mota, José Manuel Igoa, Universidad Autónoma de Madrid

Recursion is thought to be an essential property of language. However, the notion of recursion and its role in language have sparked controversy. In this work we discuss the meaning of 'recursion' and report a series of experiments in Spanish designed to test whether sentence parsing involves recursive processes.

Two structures (embedded NPs in complex NPs, and coordinate NPs) made up of words or pseudowords were tested in a click-detection paradigm. The pattern of RTs to clicks suggests that the online parsing of structures with and without semantic content can be characterized by using a recursively-defined algorithm. This means that for every syntactic constituent that is being processed, the parser reactivates previously analyzed syntactic objects, thereby matching current syntactic features to those previously processed. Our results fit nicely with current theories of working memory and recent proposals in linguistic theory that characterize coordinate structures as having a binary-branching structure.

4:30PM to 6:00PM

***Readers' temporal perspective taking associated with the deictic verbs of motion 'to come' and 'to pass'***

Enrique García Marco, David Beltrán, Inmaculada León, Manuel de Vega, Universidad de La Laguna

In face-to-face communication we take here-and-now as deictic centre. For instance, during this meeting "she comes to Moscow" in comparison with "she comes to Valencia" or "she goes to Moscow" would show behavioural and ERP incongruence effects (de Vega et al, 2014). In this study we explore how motion verbs "to come" and "to pass" are used metaphorically to describe time flow with respect to the speakers' current time. Readers were asked to judge the coherence of paragraphs describing events dated in a future or a past month, by using one of the motion verbs. Coherence ratings were higher for coherent ("August is already coming") than for incoherent paragraphs ("August already passed"). These results indicate that readers have temporal deictic centre anchored to the current temporal unit (month), and they use accordingly the deictic verbs of motion. New experiments with ERP are being carried on to explore the temporal perspective.

4:30PM to 6:00PM

***Impact of bilingualism on brain structure***

Anthyma V. Franco, Universitat de València

Ferran Suay, Departament de Psicobiologia. Universitat de València

For many decades the role and consequences of bilingualism have been discussed in terms of academic results and performance tests. Disadvantages such as shorter vocabulary or lower performance in some laboratory tasks, as well as advantages (creativity, imagination, problem solving, memory, or cognitive control, among others) have been associated to bilingualism. Recent studies have also related bilingualism with increased cognitive reserve and delayed onset of aging-related dementia.

A different approach to this issue has been allowed by the technological advances in brain imaging. The review of the available scientific literature shows higher gray matter volume and greater white matter integrity in bilingual than in monolingual individuals, in several brain regions. Despite the limitations of the studies,

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since many of these regions are strongly associated with language processing, it is safe to conclude that bilingualism exerts a positive effect on brain structure.

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### **English-Ukrainian Slang Dictionary: psycolexicographic approach**

Bondarenko Kateryna, Kirovohrad Volodymyr Vynnychenko State Pedagogical University (Ukraine)

Bilingual lexicographic rendering of substandard is at issue. The paper shows the relevance of ideographic dictionary with entries ordered according to a semantic criterion. Terms (60000 English and 10000 Ukrainian), semantically related to the same domain are listed together and refer to the same concept. The ideographic structure of the dictionary serves as a basis for adequate bilingual rendering of the lexicons. The dictionary taxonomy resides within the psycolexicographic framework as it serves a mental lexicon axis. The hierarchy facilitates the search of a mono/bilingual equivalent for a translator, proofreader or a copywriter.

4:30PM to 6:00PM

### **Neurolinguistic patterns of children with reading disabilities: preliminary results**

Norberto Pereira, Centro de Linguística da Universidade de Lisboa, NeuroCog - Centro de Reabilitação da Lesão Cerebral

Maria Armanda Costa, Centro de Linguística da Universidade de Lisboa

Manuela Guerreiro, Instituto Medicina Molecular, Faculdade Medicina Lisboa

*Background/Aim:* Attention deficit hyperactivity disorder (ADHD), inattentive type, is a frequent disorder like dyslexia in which co-occur reading disabilities. This study investigates the cognitive patterns of children with reading difficulties, characterizing them in terms of neurolinguistic patterns.

*Method:* 15 children, with ages between 9 and 11 years, divided into three groups: a control group, a group children with dyslexia and another with ADHD. All participants were submitted to a neuropsychological evaluation to assess cognitive functions such as attention, executive function, memory, working memory and visuo-perceptive functioning. Reading performance was measured with eye-tracking and traditional linguistic instruments. These measures were then correlated with cognitive measures.

*Results:* Statistically significant differences were observed between groups for the following WISC-III subtests: information ( $p < 0.05$ ), similarities ( $p < 0.05$ ), picture arrangement ( $p < 0.05$ ), block design ( $p < 0.05$ ), vocabulary ( $p < 0.05$ ), puzzles ( $p < 0.05$ ), comprehension ( $p < 0.05$ ), verbal IQ ( $p < 0.05$ ), performance IQ ( $p < 0.05$ ), WISC-III perceptual organization index ( $p < 0.05$ ) and WISC-III verbal comprehension index ( $p < 0.05$ ). Statistically significant differences between ADHD children and Dyslexic and Control group were also found on the following eye-tracking measures: "First Fixation Duration [ms]/AC" ( $p < 0.05$ ) and "Long length words:

First Fixation Duration [ms]" ( $p < 0.05$ ).

*Conclusion:* Statistically significant differences between dyslexic and ADHD children were observed on the following cognitive functions: Verbal IQ; Performance IQ; Full scale IQ; Episodic long term memory; Verbal abstract thinking; Lexical knowledge; Perceptive analysis and integration; Visual organization and visual-spatial processing; Grapheme-phonemic decoding; Phonological awareness. As far as eye-tacking is concerned, ADHD children have global longer first fixation durations than Dyslexic and Control groups and, ADHD children spent more time fixating long length words.

*Key words:* Dyslexia; ADHD; Cognitive training; Reading disabilities; Eye-tracking

4:30PM to 6:00PM

***Pitch processing in musicians and non-musicians: A diffusion model account***

Elena Gomis, Manuel Perea, Universitat de València  
Pablo Gomez, DePaul University

Prior research has shown that music practice improves cognitive abilities and produces functional/anatomical changes in the brain. Here we employed a well-known mathematical model to examine the differences in cognitive processes underlying pitch processing in musicians vs. non-musicians. In Experiment 1, we compared these two groups in a two-choice pitch discrimination task. Participants were presented with two sounds that differed in pitch—the difference in pitch could be small, medium, or large. Only the musicians were sensitive to task difficulty. In Experiment 2, we compared musicians and non-musicians in a pitch discrimination task in which participants were auditorily presented with two pseudo-syllables in Chinese that differed in pitch. None of the participants had any knowledge of Chinese or any other tone languages. Results showed a better performance for the musicians than for the non-musicians. To examine the underlying cognitive processes in these tasks, we employed Ratcliff's diffusion model, which has been previously used in visual perception tasks.

4:30PM to 6:00PM

***Can the advantage of spaced over unspaced sentences disappear with training?***

Manuel Perea, Marina Pi Ruano, Pilar Tejero, Universitat de València  
Bernhard Angele, Bournemouth University

In Western languages, eye movement guidance and word identification are severely hindered when spaces between words are removed (see Rayner, Fischer & Pollatsek, 1998). In a recent experiment, Perea, Tejero, and Winskel (2015) found that, when the words of unspaced sentences are written in alternating colour, the differences between spaced and unspaced texts were substantially reduced, thus suggesting that colours help segment words. One remaining question is whether

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this effect would disappear with extensive training with unspaced text. The present experiment was designed to answer this question. In the training phase, participants silently read two stories of around 3000 words in unspaced alternating color. Then, they were presented with 120 sentences, half of them in unspaced, alternating colour and the other half in spaced, alternating colour. Their eye movements were monitored. Similarly to the untrained participants in the Perea et al. (2015) experiment, results showed a small, but significant advantage of spaced over unspaced sentences. Thus, a single session of training does not remove the advantage of a longtime experience of reading spaced text.

9:00AM to 10:00AM

**Invited Talk**

***Orthographic processing in man, monkey, and machine***

Jonathan Grainger, Laboratoire de Psychologie Cognitive, CNRS & Aix-Marseille University

Orthographic processing lies at the interface between non-linguistic visual processing and the processing of linguistic entities. In this talk I will describe how skilled readers process orthographic information, how this skill develops during reading acquisition, and how basic visual processes might adapt to the specific characteristics of written words. Four main sources of evidence will be presented: 1) experiments examining basic processes in single word reading in children and adults; 2) experiments comparing perceptual processing of letter strings with strings of other kinds of visual stimuli; 3) a study of orthographic processing in baboons; and 4) neural network simulations of the results of the aforementioned studies.

10:00AM to 10:15AM

***Conflict monitoring in speech processing: An fMRI study of error detection in speech production and perception***

Hanna S. Gauvin, Dept. Experimental Psychology, Ghent University  
Wouter De Baene, Dept. Cognitive Neuropsychology, Tilburg University  
Marcel Brass, Robert J. Hartsuiker, Dept. Experimental Psychology, Ghent University

This study investigated whether internal verbal monitoring recruits the speech perception system, as proposed by perception-based theories of speech monitoring (e.g., Levelt 1989, Indefrey 2011), or whether monitoring is independent of perception, as proposed by production-based theories of speech monitoring such as the conflict monitoring account (Nozari, Dell & Schwartz 2011). We compared brain activity following speech errors with correct production, testing anatomical hypotheses derived from perception vs. production-based accounts. We found that error detection in overt noise-masked speech production and speech perception recruit an overlapping neural network of pre-SMA, dACC, AI and IFG. The same network has been found to be active in error making and error observation in the action domain (Newman-Norlund et al. 2009; Desmet et al. 2013, Monfardini et al. 2013). These results support the predictions of the conflict monitoring account of error detection.

10:15AM to 10:30AM

***Planning sentences in L1 and L2***

Agnieszka Konopka, Tess Forest, Max Planck Institute for Psycholinguistics

This study tested whether linguistic proficiency influences the way speakers encode events and prepare to describe them in L1 and L2. 24 speakers completed an eye-tracked picture-description task in two counterbalanced blocks: in L1 (Dutch) and L2 (English). Target events elicited mostly active descriptions (e.g., The horse

## **Oral Communications**

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is kicking the cow; 85% of all sentences). Timecourse analyses showed that, in L1 sentences, speakers fixated the agent (horse) preferentially shortly after picture onset (within 600ms), demonstrating character-by-character planning. In contrast, in L2 sentences, speakers first distributed their gaze between the agent and patient (horse and cow), and directed their gaze to the agent only after 600ms. This pattern indicates conceptual encoding of the event as a whole before beginning linguistic encoding in L2. Thus, speakers' overall experience with the target language can change the way in which they begin mapping preverbal event information onto language.

10:30AM to 10:45AM

### **Multilingual and multimodal processing: Simultaneous interpreting with text**

Kilian G. Seeber, University of Geneva, Faculty for Translation and Interpreting

Professional conference interpreters are routinely confronted with a wide range of input channels as content at conferences is delivered using multimedia devices such as slide presentations, animated videos and video prompters. Consequently, simultaneous interpreting can be viewed as a multi-modal information-processing task requiring the allocation of finite cognitive resources to different sub-tasks that interfere with each other to varying extents (Wickens 1984, 2002, Seeber 2007, 2011). Against this background, simultaneous interpreting with text, a task whereby interpreters have access to the manuscript of the speech, is of particular interest as it gives interpreters access to the same information unfolding at different speeds on two different channels. While the written discourse is immediately accessible in its entirety (within physical limits) through the visual channel, the spoken discourse unfolds over time and only becomes available incrementally at a speed imposed by the speaker. Owing to the obligation to check against delivery, however, interpreters most likely tend to both channels at different times. Following first experimental evidence suggesting that eye tracking is a suitable method to assess the extent to which interpreters actually rely on visual input in a multi-modal processing task like simultaneous interpreting (see Seeber 2012), I will present the methodology and results of an experiment aimed at exploring interpreters' eye gaze during simultaneous interpreting with text.

11:00AM to 12:30PM

### **Processing of discourse-linked (D-linked) and non-D-linked wh-questions by Mandarin speakers: a self-paced reading study**

Yang Yang, Leticia Pablos, Niels Schiller, Lisa Cheng, Leiden University Center for Linguistics; Leiden Institute of Brain and Cognition

Question words in Mandarin remain in-situ at their base position (e.g., John bought what). Xiang et al. (2013) tested on-line reading of Mandarin wh-in-situ D-linked questions (i.e. which x) compared with declarative counterparts and found that questions incur more processing costs. Previous work showed processing differences between D-linked and non-D-linked wh-phrases in English and Dutch (Frazier & Clifton, 2002; Donkers et al., 2011). We examine whether these



two types of questions behave similarly in Mandarin by conducting two word-by-word self-paced readings. Experiment 1 compared D-linked questions (which-x) with indefinite (an-x) and definite (the-x) declaratives. Experiment 2 compared non-D-linked questions (who) with indefinite (someone) and proper name (LiLin) declaratives. Results showed that D-linked questions were processed slower than declaratives while non-D-linked questions were processed faster than declaratives. Our findings show that a) not all in-situ-wh-questions are processed slower than declaratives and b) that D-linked and non-D-linked questions are processed differently in Mandarin.

11:30AM to 11:45AM

**People wait: Delayed commitment in spoken word recognition**

Hideko Teruya, Vsevolod Kapatsinski, University of Oregon

We examined the timecourse of spoken word recognition in Japanese using the visual world paradigm. Participants heard CVCV words, which shared the initial C, CV, CVC, or the final VCV with phonological competitors, whose referents were presented on the screen along with unrelated distractors. Synthesized speech was used to precisely control where acoustic cues to the target's phonemes began. Using Generalized Additive Mixed Models, we found that the only competitors fixated more often than distractors were CVC cohort competitors. Furthermore, fixations to these competitors diverged from distractors a full 600 ms after target onset. Fixations of competitor did not decrease until 400 ms after the onset of cues to the final vowel. These results are consistent with a model in which confidence in a lexical candidate accumulates and decreases gradually, and saccades are performed only once the listener has sufficient confidence that the to-be-fixated referent is likely the right one.

12:30PM to 12:45PM

**Metrical optimization in segmentation**

Sandrien van Ommen, Rene Kager, Utrecht University

Typologically, stress is often found near the word-edge and this distributional commonality lead to the assumption that word-stress is useful in speech processing. Recent research into the language-specific use of stress in segmentation gave evidence for a directional strategy in which the occurrence of a stressed syllable shapes the listeners' expectancies on upcoming word boundaries. The current study investigates the use of a secondary strategy, where listeners optimize the segmentation of a syllable sequence on the basis of their language's metrical patterns, revising their initial expectations. This hypothesis is tested for Dutch and Turkish, using a non-word segmentation task with pentasyllables containing two stresses. Indeed, participants segment to arrive at sequences which are metrically optimal in their native language. The differences and similarities between the directional and revision strategy, and the differences between Turkish and Dutch, are discussed in the light of the use of phonological abstraction in speech segmentation.

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12:45PM to 1:00PM

### **Hearing true speech helps learning a language with center-embedded structure**

Maartje van de Velde, Leiden Institute for Brain and Cognition

Fenna Poletiek, Leiden Institute for Brain and Cognition, Max Planck Institute for Psycholinguistics

A major theoretical debate in language acquisition research regards the learnability of center-embedded (CE) grammars ( $A_n B_n$  grammars, typically generating strings as  $A_1[A_2 B_2]B_1$ ,  $A_1[A_2[A_3 B_3]B_2]B_1$  etc.). This study investigated the facilitating effect of distributional biases in simple AB adjacencies during the acquisition of a CE artificial grammar. After a pre-training in which AB-biases were established, participants ( $n=48$ ) were randomly assigned to one of three groups receiving complex training strings with either a) AB distributional biases matching the CE structure (e.g., AaAbBbBa, AaBa being highly frequent and AaBb infrequent), b) AB-biases mismatching the CE structure (e.g., AaAbBaBb), or c) AB-biases unrelated (neutral) to the CE structure (e.g., AaAbBcBd). Groups were compared on how much of the CE grammar was learned. The match group outperformed the mismatch and neutral group. Results suggest that children learn complex grammatical structures by listening to caregivers' speech that truly reflects frequency biases of the objects they speak about.

1:00PM to 1:15PM

### **Speech imagery converted to whisper by the Lombard reflex**

Mark Scott, United Arab Emirates University

The Lombard effect is a long-established reflex by which people automatically raise the intensity of their voice when confronted with noise. A leading theory for the mechanism behind this reflex is that a comparator judges the difference between the actual and intended sound level of one's own voice and "turns up the volume" in the case of discrepancy. If this is so, then mouthed (and therefore intentionally silent) speech should remain silent in the presence of noise. Pilot studies on mouthed speech in my lab indicated that this is not correct and so the current experiment tests this prediction. Initial data suggest that mouthing participants inadvertently (and unconsciously) whisper when mouthing speech in noise. If confirmed, these results could be of use in schizophrenia research, as the voices heard by schizophrenics are assumed to be speech imagery (including occasional mouthing) which may also be convertible into whisper by this mechanism.

1:15PM to 1:30PM

### **The Non-At-Issue and At-Issue Meaning of Modal Particles and their Counterparts**

Laura Döre, Anna Czypionka, University of Konstanz

German particles like *bloß* ("only") are ambiguous between a modal particle and

a focus particle. While the non-at-issue (NAI) meaning of modal particles does not contribute to the truth of a sentence, the at-issue (AI) meaning of focus particles does so. In two self-paced reading experiments, we investigated the on-line processing of these different meanings. In experiment 1, the material consisted of bi-clausal sentences. The first clause provided a contextual trigger for the NAI or AI meaning and the second a minimal pair containing the particle. Reading times were shorter for the NAI meaning. In experiment 2, words preceding the particle were identical but the 3 following words triggered the NAI/AI meaning. Reading times were longer for the NAI meaning. The results point to differences in processing of the NAI/AI meaning. We discuss the finding that preceding contexts and following words lead to an opposed activation of the NAI/AI meaning.

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11:00AM to 12:30PM

### ***On the rapid use of verb-control information in sentence processing***

Josep Demestre, José E. García-Albea, Universitat Rovira i Virgili

Recent studies examined the assignment of an antecedent to the null subject (PRO) of infinitival complements. They concluded that such a null element is rapidly interpreted and that the interpretation process is guided by verb-control information. However, the critical word in these studies was always an adjective appearing after the infinitive and, thus, the results might reflect second-pass, not first-pass parsing processes.

In the present study this problem is prevented by using an infinitive reflexive verb (i.e., “esforzarse”) as the critical word. Examining the infinitive reflexive verb implies examining the first point at which the parser can detect and interpret the null subject.

In a self-paced reading experiment, verb-control information, and person agreement between the infinitive and PRO (and ultimately with its antecedent) were manipulated. Reading times clearly show that the parser rapidly assigns an antecedent to the null subject, and that this process is guided by verb-control information.

11:00AM to 12:30PM

### ***ERP correlates of inter-letter spacing in visual-word recognition***

Barbara Leone-Fernandez, Marta Vergara-Martínez, Manuel Perea, Universitat de València

Recent behavioral and eyetracking experiments on reading times have demonstrated that slightly increased inter-letter spacing are identified more rapidly than those with a narrower spacing (e.g., Perea & Gómez, 2012). To track the time-course of this phenomenon, we conducted an event-related potential (ERP) go/no-go lexical decision experiment. The stimuli were displayed in three different conditions: 1) default inter-letter setting; 2) slightly wider inter-letter spacing (+1.2-pt); and 3) slightly narrower inter-letter spacing (-1.2-pt). The ERP waves revealed that, at a very early time epoch (N/P150 component) and relative to the default settings, increased spacing was associated with larger amplitude, whereas decreased spacing was associated with smaller amplitude. These differences also occurred in the N400 component, in which both variations of default setting (+1.2-pt and -1.2-pt) were associated with similar larger amplitudes. Therefore, small variations in inter-letter spacing can affect the word processing stream not only at very early time epochs (N/P150 component), but also at the level of lexico-semantic mapping (N400 component). These differences in the inter-letter spacing have important implications for neural accounts of visual-word recognition.

11:00AM to 12:30PM

***Morphological awareness development and its relationship to the acquisition of reading in 1st, 3rd and 5th grades***

Carolina Roganti Leite Moreira, Anne-Sophie Besse, Elisabeth Demont, University of Strasbourg

Many studies conducted in different languages have observed the contribution of morphological awareness in word reading, vocabulary and also in written comprehension from 1st stages of learning (Deacon & Kirby, 2004; Sanchez, Ecalle & Magnan, 2012; Deacon, Benere & Pasquarella, 2013; Deacon, Kieffer & Laroche, in press). Thus, our overall objective is to clarify the morphological awareness development as well as its links with vocabulary, word identification and reading comprehension in 1st, 3rd and 5th grades. Several morphological tests were used, whereas sentence comprehension tests were offered only to 3rd and 5th grades. The first results show a rather different pattern among morpho-derivational awareness and morpho-flexional awareness in elementary school and a contribution of both dimensions of reading investigated after controlling for age, IQ, memory skills and phonological awareness. Currently ongoing analyzes will clarify the relationships between vocabulary, word recognition and reading comprehension from the 3rd year.

11:00AM to 12:30PM

***Impact of individual differences on masked suffix priming***

Joyse A.V. Medeiros, Jon Andoni Duñabeitia, BCBL. Basque Center on Cognition, Brain and Language

The present study explores the role of individual differences in polymorphemic word recognition. Participants completed a masked priming lexical decision on suffixed words in which targets could be preceded by suffix-related words (words sharing the same suffix) or by affixed primes with a different suffix. According to their performance in a monomorphemic word lexical decision, participants were divided in two groups: fast and slow readers. A significant interaction between reading speed and the magnitude of the masked suffix priming effects emerged. The facilitation yielded by pairs that shared the same suffix in the masked suffix priming experiment was positively correlated with the mean reaction times in the monomorphemic word lexical decision task, and only slow participants (readers with a morpho-semantic profile) showed significant priming effects. Results demonstrate that individual differences in reading profiles modulate the access to morphological information in a qualitatively different manner.

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11:00AM to 12:30PM

### ***What we see tells what we say: combining eye movement and reference production***

Xiaochen Zheng, Emiel Krahmer, Rein Cozijn, Martijn Goudbeek, Tilburg University

The Probabilistic model of overspecification (the PRO-model, van Gompel et al., 2012) proposes that during natural language production, speakers always select a property that is fully discriminating and may add other properties depending on preference and eagerness to over-specify. In order to answer the questions why speakers choose what to say and what role attention plays in this conceptualization process, the current study applies eye-tracking methodology in a replication of the experiment by Gatt et al. (2011). Eye-movements were recorded during a picture description task, where mentioning a) size b) color c) either size or color is required to distinguish the target object. A combined analysis of eye-movement and speech data showed that when participants select certain attributes to distinguish the target, more attention was paid on corresponding contrasting properties. Further discussion in the context of the PRO-model attempts to bridge the gap between visual attention, psycholinguistics and computational linguistics.

11:00AM to 12:30PM

### ***Phonological suprasegmental skills and reading development in 5th grade school children***

Nuria Calet, María Flores, Gracia Jiménez-Fernández, Sylvia Defior, University of Granada

In last decade several studies implicate suprasegmental phonology in literacy development. Nevertheless, the majority of these studies have been done in English, moreover just lexical level have been the most explored component. The present study analyzes the relationship between supragrammatical skills and reading development in 92 Spanish primary-school children of 5th grade. Vocabulary, phonological awareness, suprasegmental skills (lexical- and metrical-stress sensitivity, and non-linguistic rhythm) along with reading comprehension were assessed. Results showed that suprasegmental phonology predicted a significant amount of variance in reading once phonological awareness was controlled. Furthermore, the components of suprasegmental skills may have different relationships with reading skills.

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### ***On the locus of grapheme cohesion effect during visual word recognition***

Eva Commissaire, Laboratoire de psychologie des cognitions (EA 4440), Université de Strasbourg, France  
Séverine Casalis, SCALAB UMR CNRS 9193, Université Lille, France

Understanding the role of sublexical units remains an ongoing issue for models of visual word recognition. The present study examines grapheme coding in

French using a letter detection task by manipulating the strength of cohesion of multi-letter graphemes (highly cohesive, "ai" vs. weakly cohesive, "an") compared to single-letter grapheme, and by exploring the locus of this effect by varying duration of presentation (33 ms vs. 57 ms).

Results revealed that detecting a letter in a word was slower when embedded in a highly cohesive multi-letter grapheme (detect 'a' in 'chaud') as compared to a single-letter grapheme ('a' in 'phare'). No effect was found for weakly cohesive multi-letter graphemes ('a' in chant). A comparable pattern was observed at both durations. In all, the study sheds some light on the 'functionality' of grapheme units and on underlying ortho-phonological mechanisms.

11:00AM to 12:30PM

***Social lies processing: an Event-Related Potentials study***

Eva M. Moreno, Instituto Pluridisciplinar, Universidad Complutense de Madrid, Spain

Pilar Casado, Center for Human Evolution and Behavior, UCM-ISCI, Spain

Manuel Martín-Loeches, Center for Human Evolution and Behavior, UCM-ISCI, Spain

Prior Event-Related Potential studies have shown that, resembling semantic violations, fact-related lies (e.g. statements against our world knowledge) elicit an N400 effect, indexing a difficulty of semantic processing. We explored how the brain responds to unmarked (detached of prosodic cues) visually-presented target words that either conveyed a social 'white' lie or a socially impolite blunt truth. Our preliminary results reveal a semantic violation effect (larger N400 for semantic violations than blunt truth and white lie statements) and the absence of a veracity effect (no differences between white lies and true statements). Thus, in contrast to fact-related lies, 'white' lies do not enhance the amplitude of the N400 ERP component. Social lies do not interfere with online semantic processing, and they do not seem to engage further reanalysis processes either, typically indexed by late positivity complex effects.

11:00AM to 12:30PM

***Predicting upcoming information in native-language and non-native-language auditory word recognition by bilinguals***

Aster Dijkgraaf, Robert J. Hartsuiker, Wouter Duyck, Ghent University

Non-native language comprehension is slower and less accurate than first language comprehension (e.g. Weber & Broersma, 2012). Currently, it remains unclear whether prediction of upcoming information in non-native language auditory comprehension is similarly affected. Here we used a within participants design to test whether predictive language processing in non-native auditory word recognition occurs to the same extent as in native listening. Using a visual world paradigm, Dutch-English bilinguals listened to constraining and neutral sentences in Dutch and in English, and viewed pictures on a display while their eye-movements were measured. There was a bias of eye-movements towards

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the target object in the constraining condition relative to the neutral condition before the target word occurred in the auditory signal, and this prediction effect occurred not only in native processing but also (and to a comparable extent) in non-native processing. The results are compatible with the view that predictive processing in a non-native language is not inherently different from predictive processing in the native language (Kaan, 2014).

Currently, we are investigating whether processing language (L1 or L2) affects what type of information is anticipated. Specifically, we ask whether bilinguals predict shape features of objects in L2 like monolinguals do in L1 (Rommers, Meyer, Praamstra, & Huettig, 2013).

11:00AM to 12:30PM

### ***The influence of psycholinguistic variables in children's handwriting***

Nagore González Martín, Paz Suárez-Coalla, Fernando Cuetos, Universidad de Oviedo

Recent studies about writing acquisition suggest that in the first years of learning the writing process is dominated by the sublexical route. In the following school years this route is progressively replaced by the lexical route. Nevertheless, it could depend on the orthographic consistency of the language. The aim of this study was to identify the writing strategies used by Spanish children. The participants were children from the second, third and fourth school years and they had to perform two tasks (copying and dictation). Both were done using a graphic tablet in order to collect the handwriting latencies. The results of this research show a stronger effect of the frequency and length of the words in the lower years. In the upper years, orthography mistakes decreased. These results suggest a considerable increase in orthographic representation at the age of eight years and above.

11:00AM to 12:30PM

### ***Do automatic emotional responses depend on the language? The case of foreign languages***

Lela Ivaz, BCBL, Basque Center on Cognition, Brain and Language, Donostia, Spain

Albert Costa, Center for Brain and Cognition, Pompeu Fabra University, Barcelona, Spain; ICREA, Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain

Jon Andoni Duñabeitia, BCBL, Basque Center on Cognition, Brain and Language, Donostia, Spain

Previous research on perceptual associative tasks has shown that self-related stimuli enhance performance boosting memory, speed and accuracy as compared to stimuli unrelated to the self. This gives rise to the "self-bias", whose robustness and automaticity have been demonstrated in several recent studies. We aimed to investigate whether this effect holds in a foreign language, given recent evidence suggesting that foreign-language contexts impose a relative emotional and



psychological distance in non-native non-balanced bilinguals. To this end, two groups of Spanish-English bilinguals were tested in a perceptual matching task where they associated simple geometric shapes (circles, squares and triangles) with the labels “you”, “friend” and “other” either in their native language (Spanish) or in their non-native foreign language (English). Results showed a robust self-bias in both languages, and more importantly, the self-bias was significantly diminished in the foreign-language context as compared to the native-language context.

11:00AM to 12:30PM

**Cross-modal correspondence changes over development**

Jovana Pejovic, Monika Molnar, Clara Martin, BCBL. Basque Center on Cognition, Brain and Language  
Eiling Yee, University of Connecticut

Preverbal infants match auditory and visual information from both linguistic and non-linguistic sources (e.g., sound symbolism). This matching ability reflect cross-sensory integration between the auditory and visual brain areas. However, anatomical studies suggest that such connections do not develop before 6 months of age. To reconcile these reports, we assessed adults’ and infants’ sensitivity to sound-shape correspondence. In Study 1, we tested Spanish, Spanish-Galician and Spanish-Basque speakers. Although, the effect was found in all groups, it was the largest in Spanish-Basque group. In Study 2 and 3, we tested 4- and 12 month-old infants’ sound-shape matching biases. At 4 MOA infants showed no evidence for matching, while 12 MOA infants exhibited the effect, however (unlike in adults), it did not vary as a function of Basque experience. Overall, for sound-shape biases language experience plays a role in adults, while in infants the effect relies more on general multisensory development.

11:00AM to 12:30PM

**ERP markers of early abstract rule learning**

Júlia Monte-Ordoño, Universitat Pompeu Fabra  
Juan M. Toro, Universitat Pompeu Fabra, ICREA

The extraction of abstract rules has been claimed to be a fundamental mechanism for language acquisition. Nevertheless, it is not clear the level at which such rules are detected. The goal of this study is to explore the processing level at which abstract rules are extracted from linguistic stimuli. We registered ERPs while presented participants with trisyllabic CVCVCV nonsense words in an oddball paradigm. Standard stimuli followed an ABB rule. Deviant stimuli followed a different rule (ABB) and were composed by syllables not presented in standard words. We observed a significant positivity as early as 200 ms. More importantly, we observed a P300 component that was correlated with performance in a behavioral rule learning test. Results show that the P300 signals detection of abstract rules in linguistic stimuli, suggesting this process engages the listeners’ attention at early stages.

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### **Number agreement in Russian in production and comprehension**

Natalia Slioussar, HSE, Moscow, and St. Petersburg State University, Russia

Many experiments studied attraction errors in number agreement, like 'The key to the cabinets were rusty'. It was noted that in languages with morphological case, errors appear more often in production and cause a smaller delay in comprehension if the attractor is in Acc.Pl, which coincides with Nom.Pl. In Russian, Nom.Pl forms of some nouns coincide not only with Acc.Pl, but also with Gen.Sg. We elicited various number attraction errors in a production experiment and analyzed how native speakers react to them in a self-paced reading study (types of potential attractors: 1.Acc.Pl=Nom.Pl, 2.Gen.Sg=Nom.Pl, 3.Gen.Pl/=Nom.Pl). We discovered that errors of type 2 are less frequent than type 1, but more frequent than type 3, and while reading, people slow down on them more than on type 1, but less than on type 3. Our results have implications for different approaches to attraction and for morphological theories, especially for models of syncretism.

11:00AM to 12:30PM

### **Induced mood modulates phonological encoding in covert language production: An event-related potentials study.**

Uxia Fernández-Folgueiras, Universidad Complutense de Madrid  
Almudena Capilla, Jacobo Albert, Universidad Autónoma de Madrid  
Gerardo Santaniello, Universidad Complutense de Madrid

Effects of emotional mood in language production remain unexplored. In the current study we focus on the influence of mood in phonological encoding processing, when the lexical form of an utterance is accessed. We recorded event-related potentials from 25 participants in three different sessions. In each of these sessions a negative, a positive or a neutral mood was induced with emotional film clips. After mood induction a grapheme monitoring task was used in which participants had to decide whether a target letter was present or absent in the name that corresponded to a particular picture. The amplitude of a positive component around 300 ms, which has been related to phonological encoding, decreased with positive and negative compared to neutral moods. This result suggests that the activation level associated to positive and negative moods facilitates subsequent encoding of the phonological form compared to a neutral mood during covert language production.

**KEYWORDS:** Mood induction; Language production; Phonological encoding; Event-related potentials; P300.

11:00AM to 12:30PM

***Task-dependence activation of translation equivalents in highly proficient bilinguals***

Pilar Ferré, Cornelia Moldovan, Josep Demestre, Department of Psychology and CRAMC. University Rovira i virgili. Tarragona. Spain

The Revised Hierarchical Model (RHM, Kroll & Stewart, 1994) proposed that beginner bilinguals rely on lexical connections between L1 and L2 in order to perform translation tasks. In contrast, highly proficient bilinguals would directly access concepts from words in any of their two languages, without relying on lexical links. However, several studies have demonstrated that even highly proficient bilinguals seem to activate translation equivalents in the other language during translation, challenging the RHM.

In this study we tested highly proficient bilinguals of Catalan and Spanish in two experiments: a translation recognition experiment and a translation priming experiment in which the time of presentation of the prime was manipulated. Pairs of words could be related either in meaning or in form. The results revealed that the time course of semantic and formal effects were different. Importantly, translation equivalents appeared to be active only when the task explicitly involved translation (translation recognition).

11:00AM to 12:30PM

***Automatic lexical processing of written Chinese as indexed by the visual Mismatch Negativity effect***

Dawei Wei, University of Nottingham Ningbo Interdisciplinary Centre on Research in Neuroscience (UNNICORN), Ningbo, China

Taomei Guo, State Key Laboratory of Cognitive Neuroscience and Learning, Beijing Normal University, Beijing, China

Margaret Gillon Dowens, University of Nottingham Ningbo Interdisciplinary Centre on Research in Neuroscience (UNNICORN), Ningbo, China

This electroencephalographic study investigates how lexical information in Chinese is automatically and rapidly extracted by exploring whether the previously-documented auditory linguistic MMN effect can be replicated in a visual modality. Event-related potentials evoked by peripherally presented quintuplets of real- and pseudo- Chinese characters were registered in a standard-deviant-reverse oddball paradigm, while participants were engaged in a non-linguistic distraction task. Visual mismatch negativity (vMMN), an index of automatic and rapid encoding of changes, was computed and compared across conditions. Results included enhanced fronto-central vMMN effects for real compared to pseudo-characters. To our knowledge, this is the first time a lexical MMN enhancement effect has been observed in the visual modality. Our results, in line with previous findings on pre-attentive automatic lexical processing in the auditory domain, indicate that the long term memory traces for real (meaningful) characters make automatic lexical processing possible even in unattended conditions.

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### ***The effects of linear distance and interference of number features on subject-verb agreement processing***

Judith Rispens, Vicente Soto de Amesti, University of Amsterdam, Dept. of Linguistics, ACLC

This study investigated whether processing subject-verb agreement in Spanish is affected by constituents placed between the subject and the critical verb. Two conditions were tested: the effect of linear distance (an adverb between the subject and the verb) and the presence of potentially interfering number features of an additional NP. ERPs were recorded while 18 native Spanish speaking participants read grammatical sentences as well as sentences containing four types of subject-verb number violations with varying levels of distance and complexity. Subject-verb agreement violations elicited widespread negativities in the 350 - 500ms time window. A typical P600 effect was also observed. The results showed that the linear distance between the subject and the verb influenced the P600 effect; the presence of number features of an additional NP did not play a role. These results are discussed in the light of theories on linguistic processing demands (Gibson, 2000; Kaan & Swaab, 2003).

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### ***Lexico-syntactic interactions in attachment preferences of temporarily ambiguous sentences in a second language: An eye-tracking study***

Ana Paula Soares, Helena Oliveira, Human Cognition Lab, CIPsi, School of Psychology, University of Minho, Portugal

Marisa Ferreira, Vision Rehabilitation Lab, Centre of Physics and Optometry, University of Minho, Portugal

Montserrat Comesaña, Human Cognition Lab, CIPsi, School of Psychology, University of Minho, Portugal

In Psycholinguistics there is extensive evidence showing that bilinguals activate lexical representations of both languages in a non-selectively way even in sentence contexts. However, what remains unclear is the extent to which the lexical representations interact with syntactic representations during sentence comprehension (especially in languages where the parsers operate in opposite ways such as Portuguese and English) and how this interaction is modulated by second language (L2) proficiency. This work explored the lexico-syntactic interactions in the processing of temporarily ambiguous sentences involving a complex noun phrase followed by a relative clause [NP-V-NP1-of-NP2-RC] in L2 by native-speakers of Portuguese (L1) who are intermediate and advanced learners of English (and their respective controls). To that purpose we manipulated the cognate-status (cognates[C] vs. noncognates[NC]) of the nouns embedded in the NP phrase that precede the RC in four experimental conditions (C-C; C-NC; NC-C; NC-NC) while monitoring participants' eye-movements in a silent reading task.

11:00AM to 12:30PM

***The Simon task with young adult bilinguals revisited: New evidence and analyses***

Steven Samuel, Karen Roehr-Brackin, Monika Schmid, Debi Roberson, Essex

The bilingual advantage hypothesis contends that speakers of more than one language accrue cognitive benefits over their monolingual peers. In the Simon Task (1969), participants respond with a left- or right-key press to the colour of red and green squares that are presented either on the left or right side of the screen. The response time difference between pressing a button on the same side as the square versus the opposite side is taken as a measure of inhibitory control, and global speed as a measure of cognitive monitoring abilities. Although advantages for bilingual populations have been reported in some cases in children and older adults, in younger adults results have been more negative, leading some to argue that no bilingual advantage will be found owing to an age-related 'peak' performance level. The present find an advantage of culture but not bilingualism, contradicting the peak performance argument.

11:00AM to 12:30PM

***Two wrongs make one right: Case attraction weakens garden-path effects in comprehension***

Czypionka, Anna, Department of Linguistics, Constance University  
Dörre, Laura, Bayer, Josef, Department of Linguistics, Constance University (D)

Attraction effects are performance errors that arise when processing of subject-verb-agreement is influenced by interference of another DP bearing the marked value of a feature like number or case.

In Case attraction, NPs bearing structural case spuriously acquire the marked case of an adjacent relative pronoun. Case attraction leads to errors in production and reduced garden-path effects in comprehension, making object-initial sentences more acceptable when objects bear marked case.

We present a series of acceptability-rating and reading-time studies, comparing attraction of marked versus structural cases in German.

Reading times are shorter in object-initial conditions with marked than with structural case. This effect only occurs with overt case, suggesting that it indeed reflects case attraction (and not word order effects). Interestingly, this effect occurs even when both object-initial conditions receive similar acceptability ratings - case attraction influences the timecourse of comprehension before consciously perceived differences in garden-path severity arise.

11:00AM to 12:30PM

***An ERP study on negation processing without lexical association effect***

Yunju Nam, Upyong Hong, Konkuk University

We conducted an ERP experiment to investigate the negation processing without any effect of lexical association. In contrast with previous studies (Fishler et al,

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1983; Hald et al., 2005 etc.), we separated the lexical association effect from negation processing using a lexical negation form in Korean, i.e. "holangi(tiger)/nabi(butterfly)-nun(topic marker) kkoli tail)/nalgae(wing)-ga(nominative marker) iss(exist)-eobs(not exist)-da(declarative)". The second noun with a nominative marker was either lexically associated with the first topic noun or not, and the truth value of the whole sentence could be determined at the sentence final position by an affirmative or a negative verb denoting the 'existence' of something. As results, N400 was observed at the second noun in low lexical association conditions compared to high conditions. Besides, biphasic N400 and P600 were elicited at the negated verb compared to the affirmative verb regardless of the truth value of sentence.

11:00AM to 12:30PM

### **Sources of transfer in third language acquisition**

Natalia Mitrofanova,UiT, The Arctic University of Norway

Roksolana Mykhaylyk,Harvard University

Yulia Rodina,University of Oslo

Marit Westergaard,UiT, The Arctic University of Norway

This paper proposes a novel hypothesis for transfer in L3 acquisition - the Linguistic Proximity Model. The model predicts that transfer to an L3 can occur from either of the two previously learned languages, based primarily on structural similarity. We report on a study investigating the acquisition of L3 English by Norwegian-Russian bilingual children in comparison with monolinguals. Grammaticality judgments of two English structures are examined: Adverb placement (the word order is the same in English and Russian, but different in Norwegian), and Subject-Auxiliary inversion (the word order is the same in English and Norwegian, but different in Russian). We show positive transfer effects from Russian, which is typologically more distant from English than Norwegian, contra the predictions of the Typological Primacy Model (Rothman 2011). We also show that negative transfer is possible in the course of L3 acquisition by bilinguals, contra the Cumulative Enhancement Model (Flynn et al. 2004).

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### **Long distance dependencies in Turkish**

Seda Akpınar,Boğaziçi University

Genitive-possessive (GEN-POSS) construction in Turkish presents a unique long distance dependency in noun phrases (NPs) and non-finite embedded clauses in Turkish. There can be several words or clauses between the two pairs, and GEN mark can be implicit in the sentence (Göksel & Kerslake, 2010). We designed four self paced reading experiments to see the effects of (i) distance between GEN and POSS marked nouns and (ii) the presence of GEN mark in GEN-POSS long distance dependencies. We predict that GEN mark triggers a search for a POSS marked element, which yields shorter reading time on POSS marked element, and distance is not a determinant factor. These results; in turn, will support con-

tent addressed memory system (McElree & Doshier, 1989, McElree, 2000) rather than locality accounts (Hawkins, 1994; Gibson, 2000) or anti-locality accounts (Konieczny, 2000).

11:00AM to 12:30PM

***Iconicity of non-iconic words and its effects on language processing***

Jirí Milicka, Institute of Comparative Linguistics, Faculty of Arts, Charles University, Prague

Vojtěch Diatka, Department of Linguistics, Faculty of Arts, Charles University, Prague

The later interpretation of Saussure's postulate of arbitrariness claims that there is no connection between the form of a word and its meanings. However Saussure never actually claimed this and during the 20th century it was shown that the role of iconicity is not completely marginal.

The goal of our study is to quantify how much iconicity of common words influences their processing and to determine various factors that play a role in it (e.g. subject's gender or frequency and length of the concerned words).

Participants in our experiment matched Hindi, Arabic and Japanese words with their Czech translations. The languages were unknown to all 100 participants who were selected in accordance with the distribution of Czech population. Word pairs were randomised and outcomes were compared with a random model. In this way, we obtained not only statistically significant results, but we also detected strong effect size.

10:45AM to 11:00AM

***Processing Swedish relative clause extractions: An eye tracking study***

Damon Tutunjian, Centre for languages and Literature, Lund University, Sweden

Fredrik Heintz, Department of Languages, Linneaus University, Sweden

Eva Klingvall, Anna-Lena Wiklund, Centre for languages and Literature, Lund University, Sweden

Noun phrases involving relative clauses are assumed to universally comprise syntactic "islands" for extraction, but Swedish exists as a possible exception. Using eyetracking while reading, we investigated whether extraction from Swedish restrictive relative clauses (RCE) ([such old wheelbarrows]1 saw I a man that always washed \_\_1 with benzine...) elicit similar processing costs as extractions from non-restrictive relative clauses, which are known to comprise strong islands (StrongIs); or if they pattern closer to extractions from non-island constructions (NonIs). We also examined to what extent non-linguistic variables (working memory WM, verb-object frequency, and pragmatic-fit) contribute to such differences. Results from a mixed models analysis of the embedded verb (washed) and spillover region (with...) suggest that in early measures, both RCE and NonIs show facilitation relative to StrongIs, but in late measures, RCE patterns closer to StrongIs as WM and pragmatic-fit increase, suggesting that Swedish RCE acceptability is partly dependent on non-linguistic factors.

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***Does machine translation output as a basis for translation simplify or complicate the translation process?***

Jean Nitzke, Katharina Oster, University of Mainz

Organizations and companies increasingly make use of machine translation (MT) to improve efficiency and cost-effectiveness of the translation process and further edit the MT output to create a fluent text that adheres to the given text conventions. This procedure is known as post-editing. It is assumed that the cognitive effort is different in traditional translation from scratch and post-editing. Therefore, 24 translators (professional and semi-professional) produced translations from scratch, post-edited and monolingually edited MT output. These translation sessions were recorded with an eye-tracker and a keylogging program. In the study at hand, this data triangulation was used to evaluate how the machine translation output simplifies or complicates the processing effort during post-editing. Further, the aim was to analyse different problem-solving strategies - the talk will focus on research effort - in post-editing and translation from scratch.

11:00AM to 12:30PM

***Physical vs. nominal similarity in the early stages of visual word recognition: The case of deaf readers***

Ana Marcet, Manuel Perea, Marta Vergara-Martínez, Universitat de València

In the masked priming technique, nominal identity overrides physical identity for words (e.g., edge-EDGE = EDGE-EDGE), but not for nonwords (geda-GEDA > GEDA-GEDA) (Perea, Jiménez, & Gomez, 2014, 2015). Here we tested whether the lack of boost due to physical similarity between primes and targets is due to top-down feedback from phonological-lexical codes. To that end, we examined this issue with deaf readers, as their phonological representations are not as fully developed as in hearing readers. Results revealed that nominal identity has a processing advantage over nominal+physical identity not only with nonwords but also with words (geda-GEDA > GEDA-GEDA; edge-EDGE > EDGE-EDGE). This suggests the existence of qualitative differences in the early stages of visual word recognition of hearing and deaf readers.







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