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- Pilar Ferré

Organizing committee
(Research Group in Psycholinguistics, Universitat Rovira i Virgili)

- Roger Boada
- Natàlia Català
- Josep Demestre
- José Eugenio García-Albea
- José Manuel Gavilán
- Marc Guasch
- Juan Haro
- Daniel Huete
- Santiago Montes
- Daniel Rivera

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- Natàlia Català (Universitat Rovira i Virgili)
- Montserrat Comesaña (Universidade do Minho)
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- José Manuel Gavilán (Universitat Rovira i Virgili)
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- José Manuel Igoa (Universidad Autónoma de Madrid)
- María Dolores Jiménez (Universitat Rovira i Virgili)
- Pedro Macizo (Universidad de Granada)
- Eva Moreno (Universidad Complutense de Madrid)
- Daniela Paolieri (Universidad de Granada)
- Manuel Perea (Universidad de Valencia)
- Joaquín Romero (Universitat Rovira i Virgili)

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CONFERENCE PROGRAM
WEDNESDAY, APRIL 10th  

18:00  OPENING CEREMONY
18:30  WELCOME RECEPTION & REGISTRATION

THURSDAY, APRIL 11th  

08:00–09:00  REGISTRATION
09:00–10:00  KEYNOTE LECTURE (SEPEX CONFERENCE)
Judith F. Kroll (University of California, Riverside, USA)
The fate of the native language in second language learning: A new hypothesis about bilingualism, mind, and brain
10:00–11:20  ORAL SESSION A: BILINGUALISM 1
[OC–A1] 10:00-10:20  Cross-linguistic differences in the use of sign languages for second language learning
S. Rodríguez-Cuadrado, F. Ojedo, M. Á. Sampedro, C. Romero-Rivas, J. Santiago

[OC–A2] 10:20-10:40  Distributed vs. Intensive training improves semantic access in foreign language vocabulary learning
A. B. García-Gámez, Ó. Cervilla, P. Macizo, P. Ferré

[OC–A3] 10:40-11:00  The influence of emotional and foreign language context in learning
C. Frances, A. de Bruin, J. A. Duñabeitia

[OC–A4] 11:00-11:20  Variability in bilingual lexical access: The impact of social factors on language selection
D. J. Olson

11:20–11:50  COFFEE BREAK
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Presenters</th>
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<tbody>
<tr>
<td>11:50–13:50</td>
<td>ORAL SESSION B: WORD</td>
<td>When <em>patient</em> is the fastest word: Testing the orthographic boost</td>
<td>J. Haro, P. Ferré</td>
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<td>COMPREHENSION &amp; PRODUCTION</td>
<td>hypothesis in ambiguous word processing</td>
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<td>Disentangling cross-language orthographic markedness from neighborhood</td>
<td>E. Commissaire, S. Casalis</td>
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<td>effects during L2 visual word recognition</td>
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<td>Alternative accounts for age of acquisition effects at early stages</td>
<td>M. Á. Pérez-Sánchez, J. Marín, C. Izura</td>
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<td>word processing</td>
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<td>To read or not to read in the parafoveal visual field</td>
<td>L. Hernández-Ramos, F. Rivero, J. Dampuré, E. García-Marco, H. A. Barber</td>
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<td>Domain-general and domain-specific processes in spoken word</td>
<td>A. Klimovich-Gray, M. Bozic</td>
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<td>recognition</td>
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<td>Grammatical gender processing in European Portuguese bare nouns: Is</td>
<td>A. R. Sá-Leite, Á. Tomaz, J. Hernández-Cabrera, I. Fraga, M. Comesaña</td>
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<td>animacy responsible for the so-called gender-congruency effect?</td>
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<td>13:50–15:30</td>
<td>LUNCH</td>
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<td>15:30–17:00</td>
<td>ORAL SESSION C: ALBERT</td>
<td>From the bilingual lexicon to the language of morality: The mind</td>
<td>N. Sebastián-Gallés</td>
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<td>COSTA: IN MEMORIAM</td>
<td>behind it</td>
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<td>Prediction in bilingualism: Lexical anticipation in L2 comprehension</td>
<td>C. Martin</td>
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<td>and in accented L1 comprehension</td>
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<td>The bilingual advantage: To be or not to be</td>
<td>M. Carreiras</td>
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<td>Language contexts make strict moral codes flexible</td>
<td>J. A. Duñabeitia</td>
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<td>17:00–18:30</td>
<td>POSTER SESSION I</td>
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<td>18:30–20:30</td>
<td>SOCIAL EVENT: GUIDED VISIT</td>
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FRIDAY, APRIL 12th

09:00–10:00  KEYNOTE LECTURE
Angela Friederici (Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany)
*Syntax in the human brain: Universality and diversity*

10:00–11:20  ORAL SESSION D: SYNTACTIC PROCESSING

[OC–D1] 10:00–10:20
Lexical predictability effects on agreement encoding reveal the differences between gender and number features
M. Santesteban, P. Lorusso, A. Hatzidaki, I. Laka, A. Zawiszewski

[OC–D2] 10:20–10:40
A matter of time: Parser sensitivity to time-related grammatical categories in Spanish
D. Scarinci-Zabaleta, M. Carreiras, S. Mancini

[OC–D3] 10:40–11:00
Maintaining long-distance subject-verb dependency in sentence comprehension
B. Ristic, S. Mancini, N. Molinaro, A. Staub

[OC–D4] 11:00–11:20
Lexico-semantic influence on syntactic processing: An eye-tracking study with Spanish relative clauses
E. Álvarez García, J. M. Igoa González, S. Gutiérrez Ordóñez

11:20–11:50  COFFEE BREAK

11:50–13:50  ORAL SESSION E: LANGUAGE DEVELOPMENT & DISORDERS

[OC–E1] 11:50–12:10
Lexico-semantic control in fluent bilingual aphasia
N. Grunden, C. García Sánchez, A. Costa, M. Calabria

Deterioration of orthographic representations in Alzheimer’s dementia
M. González-Nosti, C. Martínez, F. Cuetos

[OC–E3] 12:30–12:50
PleaseApp: Gesture-speech comprehension in children with autism spectrum disorder
A. Igualada, C. Andrés-Roqueta

Acoustic qualities of bilingual infant directed speech
M. Kalashnikova

Embodied enactment during storytelling with beat gestures leads to better narrative performance in 5- to 6-year-old children
I. Vilà-Giménez, P. Prieto

Word predictability in aging: The effect of linguistic experience and cognitive abilities on reading
S. Cheimariou, T. Farmer, J. Gordon

13:50–15:20  LUNCH
15:20–17:00  ORAL SESSION F: LANGUAGE AND EMOTION

[OC–F1] Exploring the interplay between ambiguity and emotionality in visual word recognition through linear mixed models
D. Huete-Pérez, J. Haro, I. Fraga, P. Ferré

[OC–F2] Memory accuracy in bilinguals depends on the valence of the emotional event
O. Vasylets

[OC–F3] Effects of speakers’ accent and speech intelligibility on implicit biases and attributions of guilt
C. Romero-Rivas, S. Rodríguez-Cuadrado, T. Collier, C. Morgan

[OC–F4] Individual differences in processing gender agreement errors: An ERP study with unpleasant words
I. Padrón, J. A. Hinojosa, I. Fraga

[OC–F5] Higher expectancy of logical outcomes in a categorical syllogism reading task under negative mood influences
P. Rodríguez-Gómez, M. A. Pozo, J. A. Hinojosa, E. M. Moreno

17:00–18:30  POSTER SESSION II (complete list)

18:30–19:30  KEYNOTE LECTURE (COPC TARRAGONA CONFERENCE)
Manuel Carreiras (Basque Center on Cognition, Brain and Language, Donostia-San Sebastián, Spain)
The literate brain

21:00—...  GALA DINNER: ‘CASA JOAN MIRET’
**SATURDAY, APRIL 13**

**09:00–10:40  ORAL SESSION G: LANGUAGE AND ITS INTERFACES**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>09:00</td>
<td>Auditory and non-auditory models of vowel normalization</td>
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<td>L. E. López-Bascuas</td>
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<td>09:20</td>
<td>Contextual diversity modulates serial memory performance but not repetition learning</td>
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<td>F. B. R. Parmentier, M. Comesañá, A. P. Soares, L. Gallego</td>
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<td>09:40</td>
<td>Does L2 speech generate a higher gesture rate? A study of Dutch speakers of English</td>
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<td>V. Nanyan</td>
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<td>10:00</td>
<td>How people understand affirmative and negative counterfactuals: Evidence from eye-tracking in the visual world paradigm</td>
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<td>I. Orenes, J. A. Garcia-Madruga, O. Espino, R. Byrne</td>
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**10:40–11:10  COFFEE BREAK**

**11:10–12:50  ORAL SESSION H: BILINGUALISM 2**

<table>
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<tr>
<th>Time</th>
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<tr>
<td>11:10</td>
<td>Are cognate-bound suffixes preferentially processed during L2 word recognition? A test of the COST account</td>
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<td>M. Comesañá, H. Oliveira, P. Gómez, P. Ferré</td>
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<td>11:30</td>
<td>The role of language proficiency in visual attention to a talking face: New evidence from Hidden Markov Model analysis</td>
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<td>J. Birules, D. Lewkowicz, L. Bosch, F. Pons</td>
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<td>11:50</td>
<td>Bilingual language choice is affected by external primes and individual language preferences</td>
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<td>A. de Bruin, C. Martin</td>
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<td>12:10</td>
<td>Delayed ambiguity resolution in L2</td>
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<td>K. Erdocia, A. Romo, G. Martinez de la Hidalga, L. Vela-Plo, I. Laka</td>
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<td>12:30</td>
<td>Evaluation and revision in L1 and L2 text comprehension: An eye movement study</td>
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<td>A. Pérez, E. Schmidt, I. Tsimpli</td>
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**12:50–13:50  KEYNOTE LECTURE**

Gabriella Vigliocco (University College London, England)

*Ecological language: A multimodal approach to language learning and processing*

**13:50–14:10  CLOSING CEREMONY**
### POSTER SESSION I (Thursday, April 11th, 17:00–18:30)

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<tr>
<th>Poster</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>[P1–04]</td>
<td>The bilingual advantage in within-language conflict resolution</td>
<td>M. Á. Ramos Moreno, P. Macizo</td>
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<tr>
<td>[P1–05]</td>
<td>Seeing or acting? The effect of gestures on foreign language vocabulary learning</td>
<td>A. Belén García-Gámez, Ó. Cervilla, P. Macizo</td>
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<td>[P1–07]</td>
<td>Language control in bilingual word production: Insights from error rate and error type in sentence production</td>
<td>C. Martín, N. Nozari</td>
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<td>[P1–08]</td>
<td>How language type influences patterns of motion expression in bilingual speakers</td>
<td>W. Lewandowski</td>
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<td>[P1–11]</td>
<td>The role of world knowledge in the interpretation of cataphoric PROs</td>
<td>J. Vela Candelas, J. Demestre Viladevall, N. Catalá Torres</td>
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<tr>
<td>[P1–14]</td>
<td>Iconic gestures facilitate word recognition: A cross-modal priming study with words</td>
<td>I. Sánchez-Borges, C. J. Álvarez</td>
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<td>[P1–16]</td>
<td>Bilingual writing co-activation: Lexical and orthographic processing in a word dictation task</td>
<td>A. Iniesta, D. Paolieri, F. Serrano, T. Bajo</td>
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<td>[P1–17]</td>
<td>Incremental learning in word production: Tracing the fate of non-selected alternative names</td>
<td>J. D. Jescheniak, F. Kurtz, H. Schriefers, A. Mädebach</td>
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<td>[P1–18]</td>
<td>The communication without words: A normative study for the Aragonese Portal of Augmentative/Alternative Communication (ARASAAC)</td>
<td>D. Paolieri, A. Marful</td>
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<td>[P1–19]</td>
<td>Spreading of phonological activation in dyslexia through the lifespan</td>
<td>J. Rodríguez-Ferreiro, P. Suárez-Coalla, C. Martín-García, F. Cuertos, L. Buí-Legaz</td>
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<tr>
<td>[P1–22]</td>
<td>Parafoveal processing in mildly aphasic readers</td>
<td>O. Pakholiuk, L. Bos, Y. Pinto</td>
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Acquisition of words emotional meaning in two contexts: Faces and phrases | B. Gu, D. Beltrán, B. Liu, M. de Vega

Bad is good for second language learners: Facilitating effects of negativity bias in the domain of vocabulary learning | O. Vasylets

Bilinguals’ use of semantic and prosodic cues for emotion inference in speech | M-F. Champoux-Larsson, A. S. Dylman

Increased gamma frequency synchronization for fear relative to anger-related words | G. Santaniello, D. Huete-Pérez, L. Collado-Madurga, R. Calvillo, J-F. Rodríguez, P. Ferré, J. A. Hinojosa

Disentangling the effects of production and speaker variability on word learning | E. C. Kapnoula, A. G. Samuel

Learning novel concepts in the native language: The role of emotional valence and concreteness | M. Guasch, P. Ferré

Processing of inflectionally ambiguous word forms suggests existence of ‘non-finite’ word class category | D. Bordag, A. Opitz

ERP studies of visual and auditory processing of negated sentences | S. Farshchi, A. Andersson, J. van de Weijer, C. Paradis

The role of grammatical gender in predictive processing in Russian | A. Aumeistere, S. Bultena, S. Brouwer

My fear - The happiness: Affective judgments of emotional and neutral words varying in self-reference: Comparison between German, Spanish and English language | C. Herbert, I. Padron, B. Fischer, P. Ferré, I. Fraga


Response congruency effects in masked priming lexical decision | M. Fernández-López, A. Marcet, M. Perea

An ERP analysis of relative clauses in Turkish: Subject relative clauses favored | M. Akyıldız, S. Şener, Ç. Ulaşoğlu, M. Aygün eş

Are visual cues used in the discrimination of vowel and fricative native contrasts? | M. Ramon-Casas, N. Sanz, L. Bosch
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<tr>
<td><strong>P11-01</strong> Phonological processes of L1 when handwriting words in L2</td>
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<td><strong>P11-02</strong> Does orthographic cue help children to learn vocabulary in L2? A spoken word recognition study in French fifth graders</td>
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<td><strong>P11-03</strong> Lexical acquisition in French-Portuguese toddlers: Exploring the relationship between vocabulary size and executive function abilities</td>
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<td><strong>P11-04</strong> Is bilingual morphological processing modulated by individual differences? Evidence from a masked priming lexical decision task with French-English bilinguals</td>
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<td><strong>P11-06</strong> Simulating auxiliary phrase asymmetry in code-switched Spanish-English: El modelo está explaining a production asymmetry</td>
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<td><strong>P11-07</strong> Cerebellar involvement in the control of verbal interference: A study of bilingual and monolingual adults</td>
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<td><strong>P11-08</strong> On the role of non-syntactic factors in processing the Spanish no-porque ambiguity: Two elicited production studies</td>
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<td><strong>P11-09</strong> Predictive generation of syntax during sentence reading</td>
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<td><strong>P11-10</strong> Fine-grained generation of grammatical structure aligns with parsing preferences: The case of relative clauses</td>
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<td><strong>P11-11</strong> Cyclicity in parsing and interpretation decision-making in Russian and English</td>
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<td><strong>P11-12</strong> Eye-tracking the use of control information in null subject-antecedent dependencies</td>
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<td><strong>P11-13</strong> Interrogative extraction from nominal copular sentences: A structural asymmetry account</td>
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<td><strong>P11-14</strong> Sentence processing in older adults with and without subjective cognitive decline: Influences of working memory and interference control</td>
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<td><strong>P11-15</strong> Event-related and time-frequency responses to the implicit processing of syntactic structure and semantic context</td>
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<td><strong>P11-16</strong> To be (homonymous) or not to be: That is the question. A synchronic approach to homonymy</td>
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<td><strong>P11-17</strong> Phonological competition during spoken-word recognition</td>
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<td><strong>P11-18</strong> Catalan speaker-writers' awareness of adjective compositionality</td>
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<td><strong>P11-19</strong> Synchronous gesture-speech alignments in narrations by children with specific language impairment</td>
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<td><strong>P11-20</strong> Speech and hearing disorders in children with different localization of brain tumors</td>
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<td><strong>P11-21</strong> Reading aloud of pseudowords in patients with Alzheimer’s dementia</td>
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<td><strong>P11-22</strong> Listening to and singing songs facilitate initial stages of L2 pronunciation</td>
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<tr>
<td><strong>P11-23</strong> The role of lexical iconicity in situated and displaced word-learning</td>
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Complex phonological tasks predict reading fluency and reading comprehension | S. V. Dorofeeva, V. Reshetnikova, A. Laurinavichyute, T. V. Akhutina, W. Tops, O. Dragoy
Children's use of tactile input when acquiring non-native phonological contrasts | N. Esteve-Gibert, M. M. Suarez, O. Vasylets, R. Serrano
Phonological iconicity and affective content: A novel word learning experiment | D. Carrasco, J. Haro, J. A. Hinojosa, P. Ferré
The study of connotations in lexical innovations | E. Llopart-Saumell
The capability of word frequency and accessibility indexes derived from large-scale free-association Spanish norms to predict lexical processing | E. Díez, M. A. Alonso, A. Fernandez
Linguistic knowledge mediates the effects of working memory on written second language production | O. Vasylets, J. Marin Serrano
Controversial conversion | A. Opitz, D. Bordag
The influence of children's divergent sociolinguistic experiences in the development of language as a social category: A systematic review | C. Saumell Andreu, M. Hernández, F. Pons
Speech rhythm is modulated by human interaction: The case of synchrony in dyadic tasks | K. Cerda Oñate, G. Toledo, M. Ordin
Durational hand gestures facilitate the learning of L2 vowel length contrasts | P. Li, F. Baills, P. Prieto
Language partial left-lateralization speaks against modality-independence | Q. Zhang, J. Rosselló
Access to specialized knowledge: Empirical studies to facilitate Specialized Translation and Terminology Management | O. Koreneva Antonova, F. Padilla Adamúz
— ABSTRACTS —

KEYNOTE SPEAKERS

Judith F. Kroll
University of California, Riverside (USA)

An enduring question about late second language (L2) learning is why there are apparent constraints on the ability of adult learners to understand and speak the L2. Past research suggests that these constraints reflect characteristics of adult learners and the nature of the language learning contexts available to them. We propose a new hypothesis that shifts the focus to consider how a model of proficient adult bilingualism may provide new insights into late L2 learning. The critical observation is that proficient bilinguals are not monolingual-like in their native language. The new hypothesis is that successful adult L2 learners are individuals who are able to effectively change the native language to accommodate the L2 and to negotiate the cross-language competition that characterizes proficient bilingualism. The hypothesized changes may involve processing costs that initially slow the native language and make performance more error prone, make learners less sensitive to some features of the native language, and that open the native language to the influences of the L2. We review evidence from studies of language processing and brain imaging in bilinguals and L2 learners. High levels of cognitive resources and immersion in the L2 may enhance successful learning but what is hypothesized to be fundamental is change to the native language that functionally enables the L2 to develop as part of the language system. The resulting regulatory skills may ultimately benefit language processing and its cognitive and neural consequences.
[K–2] Syntax in the human brain: Universality and diversity

Angela Friederici
Max Planck Institute for Human Cognitive and Brain Sciences (Leipzig, Germany)

Language is considered to be a human-unique faculty. The different aspects of the core language system, namely phonology, semantics and syntax have long been discussed with respect to their species-specificity. Here I argue that syntax as the ability to process hierarchical structures appears to be specific to humans, and that this ability is supported by an identifiable fronto-temporal neural network connecting relevant brain regions through a particular white matter pathway. This pathway is weak in non-human primates. In humans it matures slowly after birth and it has been shown to be tightly linked to the development of syntactic abilities. Interestingly, this pathway is largely independent from the modality of the language input, be it auditory or signed, but it is modulated by the typology of a given language. These results lead to a brain based model of language that can account for universal as well as diverse aspects of languages.
[K–3] The literate brain

Manuel Carreiras

Basque Center on Cognition, Brain and Language (BCBL, Donostia-San Sebastián, Spain)

Written language permeates modern society. Reading is a key determinant of educational achievement and plays a central role in the personal and economic success of the individual. Reading skills are essential in the job market and valuable in everyday life (reading sign-posts, checks, shopping lists, medicine prospects, phone messages, address-book entries, emails, SMS, etc.). Here I will discuss the cognitive processes involved in the extraction of meaning from printed words, their time course and the neural pathways that support the reading process. Finally, I will discuss the neural sources and the malfunctioning of the circuit in a reading disorder: dyslexia.
[K-4] Ecological language: A multimodal approach to language learning and processing

Gabriella Vigliocco
University College London (England)

The human brain has evolved the ability to support communication in complex and dynamic environments. In such environments, language is learned, and mostly used in face-to-face contexts in which processing and learning is based on multiple cues both linguistic and non-linguistic. Yet, our understanding of how language is learnt and processed comes for the most from reductionist approaches in which the multimodal signal is reduced to speech or text. I will introduce our current programme of research that investigates language in real-world settings in which learning and processing are intertwined and the listener/learner has access to -- and therefore can advantage of -- the multiple cues provided by the speaker. I will then describe studies that aim at characterising the distribution of the multimodal cues in the language used by caregivers when interacting with their children (mostly 2-3 years old) and provide data concerning how these cues are differentially distributed depending upon whether the child knows the objects being talked about (learning vs. processing), and whether the objects are present (situated vs. displaced). I will then move to a study using EEG addressing the question of how discourse but crucially also the non-linguistic cues modulate predictions about the next word in a sentence. I will conclude discussing the insights we have and (especially) can gain using this real world, more ecologically valid, approach to the study of language.
Cross-linguistic differences in the use of sign languages for second language learning

Sara Rodríguez-Cuadrado¹ ², Fernando Ojedo³, Miguel Ángel Sampedro⁴, Carlos Romero-Rivas¹, Julio Santiago³

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Foreign words are easier to learn while making congruent gestures (Kelly, 2009; Macedonia & Knösche, 2011). Importantly, gesture iconicity improves word acquisition (Perniss & Vigliocco, 2014), but, so far, the use of iconic gestures for abstract words has been neglected. Here, we use a systematic approach with both iconic and non-iconic signs from the Spanish Sign Language (SSL) to teach concrete and abstract words. In a previous study (Rodríguez-Cuadrado, Ojedo, Sampedro, & Santiago, 2018) we found that Spanish native speakers learnt more foreign words from the invented language “Vimmi” if the words were concrete and matched with an iconic sign. However, two main questions arose: 1) Is this advantage present when learning a real language, like Spanish? and 2) Do phonological differences between languages matter? 32 English native speakers were asked to learn concrete and abstract Spanish words matched either with a video of an iconic or non-iconic sign, or a static picture. Learning was tested a total of four times, three during the same session (T1, T2, T3) and a week later (T4). Congruently with our previous study, learning improved from T1 to T3 and decreased for T4. However, English participants only showed the concreteness advantage on T4. Finally, there was a main effect of iconicity, but learning was enhanced by non-iconic signs, rather than by iconic signs. Results are discussed considering the potential differences between real and invented languages and the influence of both cross-linguistic differences in the encoding of motion and phonotactic rules on foreign language learning.

Keywords: second language learning, sign languages, gestures, iconicity, concreteness
Distributed vs. Intensive training improves semantic access in foreign language vocabulary learning

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The aim of this study was to evaluate the efficiency of two learning methods (an intensive training and a distributed training) for the acquisition of vocabulary in a foreign language (FL). In the study, Spanish participants learned FL words in an artificial language (Vimmi). During training, participants received L1-FL word pairs and they performed a letter monitoring task (to indicate whether L1-FL words contained a grapheme). Participants were divided in two learning groups, one of them was submitted to an intensive learning and the other performed a distributed training. All participants performed 10 blocks of training, the intensive practice group trained during a single session (10 blocks) and the distributed practice group learned in two sessions separated by an interval of 6 hours (5 blocks in each session). After finishing the training, all participants were cited 24 hours later to evaluate the vocabulary acquired in the FL. The evaluation of learning included a picture naming task in FL and a translation task from L1 to FL (forward translation) and from FL to L1 (backward translation). The naming task was used to evaluate the effect of the type of training on the semantic processing of words acquired in the FL. The distributed learning group compared to the massive learning group showed a better performance in the evaluation tasks (picture naming in FL and translation tasks). The results obtained in the naming task suggest that the distributed learning favors the development of connections between FL words and the semantic system.

Keywords: bilingualism, second language acquisition, distributed learning, intensive learning

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[OC-A3] The influence of emotional and foreign language context in learning

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Prior research using single words has found reduced emotionality in a foreign language, but what happens if emotionality is conveyed throughout a longer text rather than being contained in a word? Would emotionality affect how well we remember and associate information? We asked participants to listen to descriptions of two invented countries and tested how well they remembered facts about these countries. Each participant listened to one positive and one neutral description, which half of the participants heard in their native language (Spanish) and the other half heard in their foreign language (English). Participants remembered facts they heard in positive contexts better than those learned in neutral contexts and participants did better in their native language than in their foreign language. Importantly, there was no interaction between language and emotionality, suggesting that the decrease in emotionality in a foreign language observed in some areas might not extend to all areas.

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Keywords: emotionality, foreign language effects, non-native languages, learning, auditory modality
Variability in bilingual lexical access: The impact of social factors on language selection

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Previous research has demonstrated that bilinguals are slower switching into their dominant vs. non-dominant language (Meuter & Allport, 1999). Moreover, such switch costs are modulated by both individual (proficiency: Schwieter & Sunderman, 2008) and linguistic factors (language ratio: Olson, 2016; stimuli factors: Gollan & Ferreira, 2009). Within an inhibitory framework, these results suggest a gradient interpretation of inhibition (Green & Abutalebi, 2013). The current study explores variability in language switching costs considering an external factor: social environment.

A cued picture-naming study was conducted, in which participants ($N = 29$) named visually presented images in English or Spanish depending on the image background color. Target items ($N = 34$) were non-cognate and controlled for frequency and length (Snodgrass & Vanderwert, 1980). Reaction times (ms) were measured from the presentation of the stimuli to the onset of naming. Switch costs were calculated as the difference between naming a given picture in switch (preceded by the opposite language) and stay conditions (same language). To assess the impact of social environment, the same participants were tested in two environments: USA and Spain. Session order was counterbalanced. As sessions were a only few days apart, no change was expected or observed in either grammatical (DELE: Montrul et al., 2008) or oral proficiency (Global Accent Rating).

Preliminary results (19,584 tokens) show a significant difference in switch costs between the two social environments, with less asymmetry in the L2-environment. Findings suggest a flexible language selection mechanism that is sensitive to external social factors.

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Keywords: bilingualism, lexical access, language selection, Spanish, English
Many studies have shown an advantage for ambiguous words in word recognition. A hypothesis for this advantage suggests that ambiguous words benefit from an orthographic boost as a result of triggering a large amount of semantic-to-orthographic feedback (Hino & Lupker, 1996). In this study, we conducted four experiments to test this hypothesis. In Experiment 1, ambiguous and unambiguous words were presented in a lexical decision task (LDT), showing a facilitation for ambiguous words. In Experiment 2, the same ambiguous and unambiguous words were presented in a number-letter discrimination task. In each trial, the stimulus (a word or a sequence of numbers [e.g., “1762389”]) was briefly displayed (i.e., 50 ms), and participants were asked to indicate whether there were numbers or letters in the stimulus. The results showed an advantage in the recognition of letters when the stimulus was an ambiguous word. Finally, in Experiments 3 and 4, lexical neighbours of the ambiguous and unambiguous words presented in Experiments 1 and 2 were included in two LDT: a standard LDT (Experiment 3) and a masked priming LDT (Experiment 4). In the masked priming LDT, lexical neighbors were preceded by either the ambiguous or unambiguous word of which they were neighbors, or by a control word. Both experiments showed an advantage in the recognition of the neighbors of ambiguous words. Overall, these results suggest that ambiguous words engage a large orthographic activation during processing. These findings have important implications for ambiguous word processing and representation models.

Keywords: word recognition, semantic ambiguity, ambiguity advantage, orthography, semantic feedback
Disentangling cross-language orthographic markedness from neighborhood effects during L2 visual word recognition

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Orthographic markedness or the degree of language-shared (unmarked) versus specific (marked) orthography of L2 words has been shown to be a relevant psycholinguistic variable in bilingual visual word recognition research (Casaponsa, Carreiras & Duñabeitia, 2014; Casaponsa & Duñabeitia, 2015; van Kesteren, Dijkstra & de Smedt, 2012). In the present study, we examine the respective contributions of cross-language orthographic markedness and orthographic neighborhood effects during L2 visual word recognition. Two proficiency groups of French/English bilinguals performed an English lexical decision task with three word and pseudoword conditions: 1) large cross-language N-size and unmarked orthography (e.g., price), 2) small cross-language N-size and unmarked orthography (e.g., drive) and 3) small cross-language N-size and marked orthography (e.g., write). Evidence was found for markedness effects for both word and nonword processing. Marked words were responded to faster than unmarked words but the opposite pattern emerged for nonwords. We found no cross-language orthographic neighborhood effect and the whole pattern of results was comparable in the two groups. The results emphasize the need to take orthographic markedness as a relevant psycholinguistic variable in bilingual models of visual word recognition such as BIA/+ and when assessing the language non-selectivity hypothesis. We also discuss our findings in relation to other empirical work on the effect of orthographic markedness during L2/L1 orthographic priming and during L2 word learning.

Keywords: orthographic markedness, orthographic neighborhood, bilingualism, visual word recognition, language-nonselectivity
Alternative accounts for age of acquisition effects at early stages word processing

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The order at which we learn words has a life lasting impact on their processing efficiency and on their resistance to brain injury. It is the so called age of acquisition (AoA) effect. The Semantic Hypothesis (Brysbaert et al., 2000) and the Arbitrary Mapping Hypothesis (Ellis & Lambon-Ralph, 2000) are the most accepted explanations for the AoA effect. The Semantic Hypothesis understands the AoA effect as a property of the semantic system where early learned words are more densely connected than late acquired words. The Arbitrary Mapping Hypothesis considers that early learned words shape the connections between representations. According to this account the AoA effect only emerges when processing requires of arbitrary connections (e.g., those between an object and its name) as late learning cannot benefit from connections shaped by early learned material. Here we present an investigation of the phonological contribution to the AoA effect in lexical access. A formal (phonological and orthographic) priming paradigm with a short SOA was used in two lexical decision tasks, where the AoA of the target words was manipulated. One task was completed in Spanish, an orthographically regular language, and one in English, an opaque language. Results showed an AoA effect in both tasks and an interaction between AoA and phonological priming. These findings cannot be explained by the semantic hypothesis because word meanings are not involved at the early stages of word recognition, or by the arbitrary mapping hypotheses as the letter-to-sound conversion rules in Spanish are not arbitrary. Alternative accounts are discussed.

Keywords: age-of-acquisition, word recognition, formal priming, Spanish, English
During reading, more than one word usually reaches the sensory receptors simultaneously. When one word is fixated at the fovea, there is still additional information that can be perceived in the parafoveal visual field. The electrophysiological correlates of parafoveal word processing have been studied with a modification of the RSVP paradigm (Rapid Serial Visual Presentation; which is standard in EEG and neuroimaging research of reading). In the RSVP-with-flankers paradigm, sentences are presented word by word at fixation, but additionally each word is flanked two degrees bilaterally by other words; on its right by the next word in the sentence and on its left by the preceding word (Barber, et al., 2010. Neuroscience Letters, 479, 152-156). In this talk I will describe the results of two experiments (EEG and fMRI) in which we directly compared brain activity associated to sentence reading either presented with the standard RSVP or the RSVP-with-flankers paradigm. ERPs associated to reading target nouns embedded in sentences showed larger N400 amplitudes when being read with the RSVP than with the RSVP-with-flankers paradigm. Consistently, metabolic measures showed an increase of the BOLD signal in the RSVP condition in respect to the RSVP-with-flankers conditions at posterior parietal and occipital areas of the cortex. The activation in these areas increases when no flankers are presented in the RVSP, probably showing the inhibition of a default visual-attention mode during reading that involves parafoveal processing.

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Keywords: reading, parafoveal perception, visual attention
Domain-general and domain-specific processes in spoken word recognition

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Language comprehension relies on a broad range of cognitive processes supported by the extended bilateral fronto-temporal cortical network. The functional architecture of this network, however, is a matter of longstanding debate. Some approaches claim that parts of this network specialise for domain-specific syntactic and grammatical computations. Others propose that the underlying computations are domain-general (cognitive control, ambiguity resolution, reanalysis). We used fMRI to explore how domain-general and domain-specific demands of word processing engage these core language areas, and asked whether we can separate networks supporting these distinct demands in terms of activity or connectivity patterns.

Participants listened to closely matched English morphologically complex words that varied in domain-general versus domain-specific processing demands. Domain-general demands were those of stem-affix segmentation and embedded stem versus full form competition (e.g. in ‘played’ and ‘trade’) while domain-specific processes were verb stem and past tense processing (e.g. in ‘played’ and ‘slept’). Only domain-general demands consistently engaged the frontotemporal network - through increased activity (bilateral temporal) and connectivity (between left temporal and right frontal areas). Representational similarity analysis (RSA) confirmed that patterns within the bilateral BA 45 and left posterior MTG responded selectively to domain-general complexity. No areas responded selectively to domain-specific complexity.

Our findings show that for single words heard outside of any context, domain-general processes of segmentation and competition are critical for comprehension while grammatical analysis is not. In conjunction with other cross-linguistic findings this suggests that computations within the bilateral frontotemporal language system flexibly adjust to current processing demands.

Keywords: domain-specific, domain-general, connectivity, fMRI, multivariate
Grammatical gender processing in European Portuguese bare nouns: Is animacy responsible for the so-called gender-congruency effect?

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The processing of grammatical gender as an abstract lexical characteristic is usually studied through the picture-word interference paradigm (PWIP), in which participants have to name aloud a target picture using a bare noun while ignoring a superimposed/distractor word. Whereas some studies show the gender-congruency (GC) effect (faster responses to targets from the same gender than the distractor vs. different), others fail to find it. Inconsistencies may be due to language characteristics and the lack of well-controlled materials. The aim of the present study was to further examine this issue in a Romance language that had not been tested so far: European Portuguese. In two out of three PWIP experiments, we orthogonally manipulated the gender of the target, its phonological transparency (transparent vs. opaque), as well as the congruency between target and distractor in their gender value and in their phonological transparency. In Experiment 1, a GC effect for feminine targets was obtained. Because grammatical effects have been shown to be stronger when animate nouns are at issue (Dank, Deutsch, & Bock, 2015), in Experiment 2 we replicated Experiment 1 although removing animate nouns. Results failed to show the GC effect. Experiment 3, in which only opaque targets were selected, replicated this null effect. As previous studies obtaining the GC effect have included animate nouns in similar proportions as we did in Experiment 1 (8 to 33%), this study highlights the role of animacy in the GC effect. Findings are consistent with the animate monitoring hypothesis (New, Cosmides, & Tooby, 2007).

Keywords: animacy, gender-congruency effect, grammatical gender, picture-word interference paradigm, European Portuguese processing
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Morphophonological forms of upcoming words are determined by person, number or gender features, which are suggested to be processed differently (i.e. Greenberg, 1963; Carminati, 2005). This study investigates whether and how do gender and number features differ by testing to what extent verb-cloze probability interacts with object-clitic gender and number agreement.

ERPs of 64 Spanish natives were recorded during a RSVP reading for comprehension task. (a) Lexical predictability (semantically high vs. low-cloze verbs) and (b) Grammaticality (grammatical vs. ungrammatical object-clitic) were manipulated within-participants (e.g., El conductor frenó ... el tren para intentar pararlo/*pararla/*pararlos vs. aparcarlo/*aparcarla/*aparcarlos ..., “The driver stopped ... the train to try to stop*itCL-SG-MASC/*FEM vs. park*itCL-SG-MASC/*FEM/*themCL-PL-MASC ...”), and Feature type (gender vs. number) between-groups (N=32 each).

If lexicosemantic predictability and morphophonological agreement information are processed simultaneously, interaction effects should show, while if independently, additive effects should show. Importantly, if gender and number are processed differently, divergent interaction patterns should emerge.

Results revealed N400 grammaticality effects (300-500 ms) with larger negativity for ungrammatical than grammatical sentences, left-lateralized for gender and right-lateralized for number violations. Predictability effects showed larger negativity for low-cloze than high-cloze verbs. Interestingly, the grammaticality by predictability interaction was only significant for gender features: grammaticality effects only with low-cloze verbs and predictability effects only in ungrammatical sentences. Between 500-800 ms, there was only a P600 grammaticality effect for gender features.

Our results suggest that similar processing resources are used for lexicosemantic prediction/integration and lexically-based grammatical gender agreement, while different syntactically-based processing resources are used for number agreement.

Keywords: agreement, number, gender, sentence comprehension, lexical prediction
A matter of time: Parser sensitivity to time-related grammatical categories in Spanish

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The goal of the present experiment is to investigate whether the parser is sensitive to the intrinsically different information that tense and aspect convey, in spite of their syncretic expression on verb inflection in Spanish.

We carried out two experiments using a violation paradigm (see sentences below) while measuring ERPs (Exp. 1) and eye movements (Exp. 2) to compare the processing of tense and aspect, which linguistically encode different dimensions of temporality: whereas tense indicates the location of an event in time —e.g. past vs. future— and is considered a deictic category, aspect expresses time from an internal perspective —e.g. perfective (finished event) vs. imperfective (ongoing event) and can be considered an inherent part of the event structure specification.

CONTROL: El día que la pastelera hizo la mermelada, seleccionó la fruta más fresca.
TENSE: El día que la pastelera haga la mermelada, seleccionó la fruta más fresca.
ASPECT: Cada vez que la pastelera hacía la mermelada, seleccionó la fruta más fresca.

The ERP experiment showed that the tense condition elicits an anterior negativity in the 300-500 ms time-window followed by a P600. In contrast, only a P600 was elicited by aspect. Experiment 2 showed that reading patterns were similar in both conditions, but the effects appeared earlier and were stronger for the tense violation. These results suggest that the processing of these non-argumental dependencies follows different routines and time-courses as a function of the depth of the event representation that needs to be accessed.

Keywords: tense, aspect, ERP, eye-tracking, syntax
Research on long-distance filler-gap dependencies shows that fillers are actively maintained over clause boundaries (Wagers & Phillips, 2014), inducing processing cost (Chen et al., 2005; Fiebach et al., 2002). In two eyetracking studies, we investigate whether there is also a processing cost associated with maintenance of the subject-verb dependency, which would be unexpected under the accounts that treat this long-distance dependency formation as a retrieval process (e.g. McElree et al., 2003). In Experiment 1, the matrix subject in the Spanish sentences was immediately followed by an embedded adverbial clause (La chica, cada vez que una amiga viene, prepara la cena, “The girl, whenever a friend comes over, prepares a dinner”). In the control condition, the same adverbial clause followed a prepositional phrase (Para la chica, cada vez que una amiga viene, preparar la cena es un placer, “For the girl, whenever a friend comes over, preparing a dinner is a pleasure”), so that it does not intervene in an open subject-verb dependency. 40 native Spanish speakers read 112 items. We found increased go-past reading times in the experimental condition ($t=3.32, p<.001$). In Experiment 2, we applied the same study design and procedure to English and tested 56 native English speakers reading 80 sentences. Again, experimental condition generated longer reading times on the embedded clause, both in first pass ($t=2.99, p=.003$) and go-past reading times ($t=4.60, p<.001$). This suggests that at least some information about the subject-verb dependency is maintained over the course of sentence comprehension, and not retrieved at the verb.

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**Keywords:** long-distance dependencies, subject-verb dependency, eyetracking, embedded clauses
Lexico-semantic influence on syntactic processing: An eye-tracking study with Spanish relative clauses

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Previous studies have shown that lexical frequency and semantic features of content words, like nouns or verbs, can influence syntactic processing (Mak et al., 2006; Johnson et al., 2011; Fedorenko et al., 2012). However, this question has been scarcely analyzed with function words, and the few studies available present methodological limitations that leave it unanswered (Tabor et al., 1997; Schmauder et al., 2000; Gibson, 2006). Bearing this in mind, an eye-tracking experiment was conducted, in which Spanish native speakers read relative clauses (RCs). This kind of sentences is headed by function words known as relativizers, which, in certain contexts, may vary without modifying the syntactic structure of the sentence (e.g. la ciudad en la que nací –the city that I was born in- vs la ciudad donde nací –the city where I was born). However, relativizers have different linguistic features: For instance, donde (where) is less frequent than que (that) but bears a locative semantic feature that is absent in the latter. These features can thus be analyzed in order to determine whether they influence RC processing.

Our results show the relativizers’ lexical frequency influenced not only their lexical activation, but also their integration into the syntactic structure, as shown in first-pass and go-pass measures. Similarly, relativizers’ semantic features determined the cost of integrating subsequent units (e.g. the RC verb). These results are more compatible with an interactive view of language processing, whereby parsing processing are not blind to non-syntactic information, but lexical and semantic features can also guide this process when manipulating both content and function words.

Keywords: syntactic processing, interactive processing, relative clauses, function words
Individuals with aphasia frequently show lexical retrieval deficits due to increased interference amongst competitors during word selection. This has been demonstrated in tasks where this competition originates at a semantic level, such as naming pictures grouped by semantic category. However, the extent to which lexical retrieval in semantic interference conditions is affected a second language (L2) has not been extensively explored. Moreover, there is little agreement over the degree of language independence in semantics, possibly suggesting similar deficits between the two languages.

In this study we explore the naming performance of Catalan/Spanish bilinguals with aphasia (n=12) and age-matched healthy controls (n=14) in a semantically blocked cyclic naming task for the two languages. Also, we explore whether this extends to comprehension by testing participants in a word-picture matching task during a mixed language condition.

In the cyclic naming task, the semantic interference effect was similar in bilingual patients with aphasia and healthy controls when required to perform the task in their first language (L1). However, bilingual patients showed a larger semantic interference effect than controls when naming stimuli in their L2. Similarly, in the matching task, patients suffered more delay than controls when the task required to switch from L1 into L2 than vice versa.

These results suggest that L2 retrieval may be selectively impaired in bilinguals within those conditions in which semantic competition is higher. Furthermore, these lexical deficits extend to those demanding conditions in which both languages are involved at a comprehension level.

Keywords: semantic control, aphasia, bilingualism
Writing disorders has been scarcely studied in Alzheimer's disease compared to other cognitive functions. In the literature there is no agreement about the dysgraphic profile that characterizes the disease, or how changes in writing evolve over time and with the progression of cognitive impairment.

The objectives of this study, therefore was, on the one hand to characterize alterations of spelling in the early stages of the disease, comparing the responses in a group of 32 subjects with Alzheimer disease with a control group of 32 healthy elderly matched with patients in age, gender and education level and, on the other hand, to find out how spelling changes evolve as the disease progresses, by tracking 21 patients for 30 consecutive months.

The 64 participants were evaluated by a dictation task which included regular, ruled and irregularly spelled words, as well as pseudowords. Follow-up was assessed with the same set of tasks every six months.

Among the most relevant results of this research highlights the worst performance of Alzheimer patients on writing all types of stimuli, the difference with the controls was higher in ruled or irregularly spelled words than in the regular ones; by contrast, no significant differences between the pseudowords and regular words were found, although there were fewer errors in the latter. Moreover, the dysgraphic alterations incremented with increasing severity of cognitive impairment.

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Keywords: writing, dictation, Alzheimer’s dementia, longitudinal
The ability to infer information from iconic gestures (i.e., gestures expressing semantic information) develops progressively during infancy. However, several studies have shown that children with Autism Spectrum Disorder (ASD) show impairments in the integration of multimodal signals. Moreover, few studies have also shown different patterns of information processing of the gestures in children with ASD with respect to typically developing (TD) children. The present research aims to study whether children with ASD are able to integrate information expressed in the oral modality (e.g., saying cut), together with supplementary information expressed by gestures (e.g., gesturing scissors). A gesture-speech integration module was created as part of a novel pragmatic assessment App (PleaseApp). Two animated cartoons were designed to articulate gestural information during a short oral discourse that allowed assessing 12 trials of gestures-speech integration. Responses from 6- to 12 year-old children with ASD (N=30) and TD (N=30) were analyzed from three potential choices of response in each trial: an image representing the correct information (e.g., scissors), a gesture competitor (e.g., clothes peg) and a semantic competitor (e.g., knife). The results showed that children with ASD produced more errors when integrating gesture-speech information than TD children. However, both groups behaved similarly driven by the semantic error competitor. Pragmatic abilities with the CCC-2 questionnaire were also analyzed. Practical and theoretical implications of the ability to infer semantic information from gesture and oral modalities are also discussed.

Keywords: autism, gesture, semantics, pragmatics, language
Acoustic qualities of bilingual infant directed speech

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Bilingual infants acquire their two languages along a similar timescale to their monolingual peers, but their bilingual experience impacts the developmental trajectories of specific linguistic abilities such as speech perception. This has been attributed to the quality and quantity of bilinguals’ early dual-language input, often characterised as reduced and noisy compared to monolinguals’ single-language input.

This study focuses on the vowel hyperarticulation component of infant-directed speech (IDS), i.e., parents’ tendency to produce acoustically-exaggerated vowels. This component is proposed to facilitate early language development by providing infants with especially clear speech input. Supporting this claim, a significant correlation has been demonstrated between the degree of vowel hyperarticulation in monolingual mothers’ IDS and their infants’ ability to discriminate native consonant contrasts.

This study investigated the qualities of IDS produced by bilingual mothers and their relation to bilingual infants’ linguistic development. Twenty bilingual Basque-Spanish mother-infant (9-months-old) dyads participated. First, recordings of mothers’ IDS produced during play sessions with their infants were used to extract acoustic measures of vowel productions and compute indices of vowel hyperarticulation for Basque and Spanish. Second, infants’ discrimination of two consonant contrasts was assessed in a visual fixation paradigm using one contrast native (/pa/-/ba/) and one non-native (/pa/-/pʰa/) to Basque and Spanish. Two linear mixed effects models will be reported measuring the relation between infants’ (1) native and (2) non-native discrimination and indices of vowel hyperarticulation in IDS. Results will be discussed in relation to the linguistic functions of IDS to infants growing up in monolingual and multilingual environments.

Keywords: infant directed speech, vowel hyperarticulation, speech perception, infancy, bilingualism
Embodied enactment during storytelling with beat gestures leads to better narrative performance in 5- to 6-year-old children

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Recent research has shown that when preschoolers listen to a speaker who is simultaneously making beat gestures, this favors the recall and comprehension of what they have heard (Igualada et al., 2017; Llanes-Coromina et al., 2018) and also boosts their narrative performance (Vilà-Giménez et al., 2018). However, previous studies have not tested the effect of encouraging children to produce beat gestures while retelling narratives—as opposed to merely observing them—on their narrative performances. In this study, a total of 47 5- and 6-year-old children participated in a between-subjects brief training study with a pretest and an immediate posttest design. Children were exposed to a training phase with a total of six one-minute stories, presented under two experimental conditions: (1) beat non-encouraging condition, and (2) beat encouraging condition. Video recordings of the pretest and posttest narratives were then scored for narrative structure and fluency. A comparison of scores showed that children in the group that had been encouraged to use beat gestures performed better than the group of children who were simply asked to retell the story without gesture instruction. All in all, this evidence suggests that beat gestures serve to boost language development and that their embodied enactment during narrative retelling relies on the cognitive processes involved during both the observation and performance of narratives. This research can have an impact on our understanding of the integration of speech and gesture on children’s gesture and narrative development, as well as practical implications for teaching methodologies.

Keywords: beat gestures, embodied enactment, language development, narrative discourse performance
[0C-E6] Word predictability in aging: The effect of linguistic experience and cognitive abilities on reading

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Previous research has shown that comprehenders use context information to predict upcoming linguistic material during real-time language comprehension. Research in the mediating factors of prediction has shown, first, that predictions are informed by our experience with language and second, that these predictions are modulated by cognitive factors, such as working memory and processing speed. However, little is known about how these factors interact in aging in which verbal intelligence remains stable or even increases, whereas processing speed, working memory, and inhibitory control decline. We administered a series of experience- and cognitive process-related individual difference measures to determine how these variables interact in the processing of strongly or weakly predicted words given context.

We monitored eye-movements as younger (N=26) and older (N=27) adults read sentences containing either a high or low cloze word. Linear mixed-effects models were adopted. We replicated previous results regarding predictability effects, in that, older adults were slower readers than younger, but they used predictability information in a similar way. Linguistic experience mediated predictability effects in first-fixation, in that, individuals with higher vocabulary showed larger predictability effect than those with poorer vocabulary. Go-past time and probability of fixation were influenced by print exposure measures, whereas probability of regression was affected by working memory capacity. Total-time of fixation was mediated by both linguistic (vocabulary) and cognitive (processing speed) factors. Our results indicate that not all eye-tracking measures are influenced by the same cognitive or linguistic abilities. The results are discussed in relation to recent theories of hierarchical predictive processing.

Keywords: sentence processing, predictability, reading, eye-tracking, aging

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Semantically ambiguous and emotional (i.e., affectively valenced) words are frequent in language, and the distinct meanings of ambiguous words can sometimes have a different valence value. For instance, the word “cataract” has a negatively valenced meaning (“eye disorder”) and a positively valenced meaning (“waterfall”). However, normative databases of affective properties (and other lexico-semantic variables) including ambiguous words do not commonly provide individual ratings for their meanings. We started this study elaborating the first Spanish database of meaning-dependent affective (valence) ratings for ambiguous words, in which the relative dominance of each meaning was taken into account. We examined the distribution of ambiguous words in relation to the valence of their meanings and analyzed the contribution of the valence of each meaning to the valence rating of the word when presented in isolation (i.e., not disambiguated). As a second step, we conducted a lexical decision experiment with all the words in the database (N=504). The effects of several lexical, semantic (including ambiguity measures) and affective variables on response times were analyzed using linear mixed-effect models. Several interesting interactions were observed, including the interaction between ambiguity and other lexico-semantic variables (e.g., age of acquisition) and the interaction between valence and ambiguity. These results suggest that the affective/semantic properties of the distinct meanings of ambiguous words should be taken into consideration in language processing research involving this type of words.

Keywords: emotion, ambiguity, database, visual word processing, lexical decision task
Evidence increasingly indicates that emotion conveys memory benefits (Hamann, 2001). Studies with monolinguals have also shown that negative information tend to be remembered more accurately and with greater contextual detail than positive and neutral information (Dewhurst & Parry, 2000; Kensinger, 2009). However, the question arises of whether the same effects occur in the second language (L2) provided it is considered to be less emotional than native language (Dewaele, 2004; Pavlenko, 2012). In this study, we explored if and how positive and negative valence of information modulates the accuracy of memory for its semantic and linguistic content. There were three sessions of data collection during which a group of proficient Spanish-English bilinguals viewed, in the counterbalanced order, a neutral, a positive and a negative video. For each video, the participants performed a written retelling task and a series of tests which assessed memory confidence and memory vividness for the semantic and linguistic content. The subjects also assessed the perceived emotionality of the videos. In the analysis, we found greater linguistic alignment between retellings and original videos scripts for negative and positive videos as compared to the neutral video. The semantic analysis of the retellings also showed increase in the reconstructive memory errors in the neutral video as compared to the emotionally charged videos. The results of the tests showed enhanced memory confidence and vividness for the information from the negative video. Finally, there was a positive relationship between the subjective perceptions of emotionality and memory accuracy for the linguistic content.

Keywords: emotional memory enhancement, positive and negative valence, proficient bilinguals
Effects of speakers’ accent and speech intelligibility on implicit biases and attributions of guilt

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When charged with the same crime, accented speakers are typically rated as guiltier than native speakers (Dixon, Mahoney, & Cocks, 2002). Also, people usually have negative implicit biases towards accented speakers (Pantos & Perkins, 2012). Whilst some studies suggest that these effects are due to the activation of stereotypical traits associated with another linguistic group (Giles & Watson, 2013), others propose that differences in the perception of native and accented speakers are due to processing fluency (noisier conditions would elicit more negative affective reactions; Dragojevic & Giles, 2016). In the current study we aimed at unravelling which of these two hypotheses is more accurate. 75 participants were presented with native and foreign-accented speech under clear and noisy speech conditions while they completed an implicit association task. Moreover, they listened to the testimony of a defendant (either native or foreign-accented, and under clear or noisy speech signals) charged with armed robbery, and had to decide how many years the defendant had to spend in prison. Results showed a negative implicit bias towards foreign-accented speakers, which was not modulated by the intelligibility of the speech signal. Furthermore, the foreign-accented defendant received harsher sentences than the native defendant irrespective of speech intelligibility. Importantly, a noisy listening background reduced the sentence for the foreign-accented (but not for the native) defendant. Therefore, our results suggest that negative biases towards accented speakers are due to the activation of negative traits associated to them, and that noisy signals may reduce this activation in some conditions.

Keywords: foreign-accented speech, speech intelligibility, implicit biases, attributions of guilt
Individual differences in processing gender agreement errors: An ERP study with unpleasant words

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The purpose of this work was to study individual differences along the time course of gender error processing in neutral and emotional words with the ERP technique.

Sixty native Spanish participants performed a grammatical judgment task while their electroencephalographic activity was recorded. We used noun-phrases (Det + Noun + Adjective) in which the adjective could be neutral or moderately unpleasant and could agree or not in gender with the preceding noun.

Grand-mean analyses showed early effects of emotionality (N100), the classical effects of grammaticality (LAN and P600), as well as an interaction between grammaticality and emotionality in the LAN time window, with an augmented LAN for unpleasant adjectives. However, the analyses of the individual ERP responses revealed that not all the participants showed the typical biphasic LAN-P600 pattern in the presence of morphosyntactic errors. Thus, in line with Tanner et al. 2014, we found that participants displayed a continuum between negative and positive dominance in their ERP responses (i.e., either more LAN effects or more P600 effects). Results revealed that only those participants with negative dominance showed LAN effects and those with positive dominance showed P600 effects. Moreover, although both groups were sensitive to word emotionality in the LAN time-window, participants with negative dominance showed similar LAN effects in the neutral and the unpleasant conditions. Thus, grammaticality and emotionality did not interact. Future studies should take in mind these two ERP patterns when studying the neural correlates of morphosyntactic processing.

Keywords: error processing, emotional words, EEG, individual differences
Higher expectancy of logical outcomes in a categorical syllogism reading task under negative mood influences

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Previous research has shown that mood interferes with our reasoning abilities. Different mechanisms such as cognitive overload and narrowing of attention have been postulated to lie behind such interference. We used event-related potentials to examine the consequences of an induced mood on the processing of logical and illogical conclusions while participants read categorical syllogisms. First, short film clips were presented to participants to induce either a highly arousing positive, highly arousing negative, or neutral affective state. Participants then performed a reading task indicating whether the conclusions of categorical syllogisms logically followed or not from previous premises. The mood induction procedure was only successful for the negative state. Behaviorally, more errors were committed overall for illogical compared to logical conclusions, whereas no mood effects arose. Electrophysiologically, different brainwave patterns were elicited for logical and illogical conclusions. Collapsing mood sessions, illogical conclusions showed an enhanced centro-parietal N400 response relative to logical ones. However, under a highly arousing negative mood, the N400 logical validity effect remained significant for a longer period of time at fronto-central regions, while it vanished for the neutral and positive mood sessions. Our post hoc results indicate that participants were more likely to anticipate the logical conclusions under the influence of a highly arousing negative mood state. This result goes in line with the view that a more analytical reasoning style is facilitated under the influence of a negative mood.

Keywords: mood, reading, reasoning, ERPS, N400
SATURDAY, APRIL 13th

ORAL SESSION G: LANGUAGE AND ITS INTERFACES

[0C–G1] Auditory and non-auditory models of vowel normalization

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For individual speakers and under stable acoustic contexts, it seems that the first two formants F1 and F2 could provide enough information to accomplish vowel categorization in Spanish. However, F1 and F2 change dramatically for a given vowel when produced by different speakers. In order to solve this computational problem it has been proposed that cognitive systems might execute perceptual normalization routines. Thus, different normalization procedures have been proposed in the literature (Flynn, 2011). Normalization algorithms are classified as intrinsic or extrinsic depending on the information the system is allowed to use when normalizing a given vowel or formant. Furthermore, the normalizing model might be auditory based (if they use known processing properties of the auditory system) or non-auditory based (if they do not). In this study, four different algorithms were used in order to normalize vowel productions: Cam-transformed frequency values as described in Glasberg and Moore, 1990; Syrdal and Gopal (1986) Bark transformation; Lobanov (1971) standardization procedure and Nearey (1971) grand-mean method. Two groups of subjects (5 males and 5 females) participated in the experiment. The recorded waveforms were subjected to windowed Fourier Transforms, and formant tracking procedures were used to measure F1, F2 and F3. F0 was also estimated from the final spectrographic representation of the different vowels. Mean values of all 4 parameters were used for vowel normalization. Formant intrinsic procedures performed better at normalizing Spanish vowels than formant extrinsic methodologies. This result was obtained for both auditory based and non-auditory based models.

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Keywords: vowel perception, speaker normalization, auditory models
Contextual diversity (CD; the number of different contexts in which a word appears within a corpus) constitutes the strongest predictor of reading performance and modulates the access to lexical representations in lexical decision tasks. Recently, we showed that CD also modulates short-term serial memory (Parmentier, Comesaña & Soares, 2017): Low CD words yielded better serial recall performance than high CD words. Here, we sought to replicate this finding and examine the extent to which the effect of CD on serial memory might reflect a greater difficulty in encoding high CD words in relation to the episodic context of a sequence. To study the latter, we made use of the Hebb repetition paradigm in which we compared memory performance for randomly ordered and repeated sequences. Participants performed an order reconstruction task involving 8-word sequences in a 2 (high vs low CD) x 2 (random order vs repeated sequence) design, in which the Hebb sequences were presented every four trials (12 times). We observed significant and equivalent Hebb learning for the low and high CD words, while recall levels were significantly greater for low than for high CD words. High contextual diversity significantly increased the probability of omissions and marginally increased the probability of order errors. Sequence repetition did not affect omissions but reduced order errors (CD did not modulate this interaction). Altogether, our results suggest that the effect of CD on serial memory is likely to reflect differences in episodic item retrieval rather than differences in episodic order memory.

Keywords: contextual diversity, serial memory, order reconstruction, Hebb effect, repetition learning
SATURDAY, APRIL 13th

ORAL SESSION G: LANGUAGE AND ITS INTERFACES

[OC–G3] Does L2 speech generate a higher gesture rate? A study of Dutch speakers of English

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The study focuses on identifying the differences in gesture rate in L1 Dutch and L2 English narratives and the effect L2 gestures might have on memory.

Given that gestures facilitate the lexical retrieval process (Rauscher & Krauss, 1996) and ease the cognitive load on verbal working memory (Gillespie et al., 2014) we assume that bilinguals will use more gestures in their L2 than in L1 speech.

To test this hypothesis, first, we compare the frequency of gestures used in L1 and L2 storytelling. Second, basing on Prebianca’s (2014) suggestion that proficiency can mediate the lexical access in speech production, we test whether proficiency has a bearing on the frequency of gesturing in L2.

To elicit gesture an experiment was designed during which the informants were asked to watch a short cartoon clip and retell it to a listener in two languages: first in L2 English, and then in L1 Dutch.

We used a paired-sample t-test (between subjects) to compare the gesture rate in Dutch and English. L2 proficiency of the participants was determined through self-reported and behavioural measures.

The results reveal that Dutch speakers tend to gesture more in their L2 English speech. Specifically, we find significant differences in the categories of iconic and deictic gestures. Further analysis suggests that there are no significant differences between the proficient L2 speakers and their less advanced peers in terms of the gesture rate in L2. The findings provide at least partial support for the Verbal Working Memory and the Lexical Retrieval theories.

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Keywords: gesture, second language, memory, proficiency, lexical retrieval
How people understand affirmative and negative counterfactuals: Evidence from eye-tracking in the visual world paradigm

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Counterfactuals such as ‘if she had arrived early, she would have bought roses’ require people to envisage two possibilities, the conjecture, ‘she arrived early and she bought roses’ and the presupposed facts, ‘she did not arrive early and she did not buy roses’. We report two eye-tracking studies to examine how people process these two possibilities and whether they are equally accessible. In Experiment 1, people heard affirmative counterfactuals while looking at four printed words on a computer screen, e.g., ‘roses’, ‘no roses’, ‘carnations’, ‘no carnations’. The results showed that participants first looked at ‘roses’ and then its implicit negation, ‘carnations’. In contrast, for negated counterfactuals, ‘if she had not arrived early, she would not have bought roses’, they looked only at ‘roses’. In Experiment 2, we corroborated these results for counterfactuals in a binary context (there were roses or carnations in the shop) and multiple contexts (there were roses or carnations or lilies or daisies). We discuss how the understanding of counterfactuals and negation affects the accessibility of the two possibilities.

Keywords: counterfactual, negation, comprehension, visual world paradigm
Complexity in natural language acquisition: Computational models

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Do some languages take longer for the child to acquire than others? This question focuses on a controversial concept in linguistics: natural language complexity. While it has been defended for a long time that all natural languages must be equally complex, in the last twenty years, the interest on linguistic complexity has led researchers to challenge the equi-complexity dogma by addressing the study of complexity from different points of views.

In this paper, we tackle the issue of linguistic complexity from a developmental point of view by considering child first language acquisition. Due to the problems that methods for studying language acquisition (observational and experimental) may set out to the study of linguistic complexity, we claim that computational tools may offer many methodological advantages for evaluating the relative complexity of natural languages.

We propose to use machine learning algorithms to calculate the cost to reach a good level of acquisition in a given language. We claim that those learning algorithms offer the possibility to measure the difficulty of acquiring different natural languages. Among the advantages of those models, we highlight the following: they are models that focus on the learning process; they do not require any prior language-specific knowledge and learn incrementally; they use realistic data and psychologically plausible algorithms that include features like gradual learning and robustness to noise in the data.

Keywords: linguistic complexity, natural language acquisition, machine learning, computational models of language acquisition
[OC-H1] Are cognate-bound suffixes preferentially processed during L2 word recognition? A test of the COST account

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A recent masked priming lexical decision study on bilingual morphological processing has shown that the degree of cross-language similarity of suffixes modulates the size of morphological masked priming effects more than that of bases (i.e., priming effects were greater for derived words whose suffixes had a high degree of cross-language overlap such as –ist [-ista in European Portuguese-EP]) (Comesaña et al., 2018, PlosOne). The authors considered this result an unequivocal index of the co-activation of morphological segmentation and translation processes during the recognition of L2 derived words (the COST account). While the bases were free morphemes (arte- in artista [art in artist]) and thus they competed for selection within the lexical level, the suffixes were bound morphemes which benefited from overlap of sub-lexical units. If this is true, free suffixes like –age (-agem in EP), would originate lower masked priming effect sizes in comparison with bound suffixes. The aim of the present research was to test this hypothesis by using a masked priming lexical decision task with high-proficiency EP-English bilinguals. A control group of native speakers of English was also assessed. Findings support Comesaña et al.’s hypothesis showing higher priming effects for bound than for free suffixes.

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Keywords: bilingual morphological processing, free and bound suffixes, COST account
The role of language proficiency in visual attention to a talking face: New evidence from Hidden Markov Model analysis

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Although adults usually look at the eyes of talking faces, when the auditory information becomes compromised (e.g. speech-in-noise or L2-speech) they switch towards the mouth area to help them process the speech signal (Barenholtz et al., 2016). Still, it remains to be known whether adults’ proficiency level in a second language modulates their attention towards the mouth of a talking face. Here, we presented 56 English learners (19 low-, 18 mid-, 19 high- level of English) and 22 native English speakers with videos of talking faces in English and recorded their eye gaze. Then, we explored whether their proficiency level modulated their face-exploration patterns. Results from average-looking-times at the a-priori defined AOIs - eyes and mouth - showed that, as expected, native English speakers preferred the eyes over the mouth whilst the English learners looked equally at both AOIs. Surprisingly however, the English learners’ proficiency level did not modulate these results. More fine-grained analyses using Hidden Markov Models (HMMs) automatically identified 5 states (AOIs); left-eye, right-eye, mouth, nose and “other”. The 5-state transition matrix showed a preference for the mouth and the right-eye (RE bias), and regarded the left-eye and nose as “transition states”. Hence, we computed fixation counts only to the right-eye and mouth and we found that the higher proficient learners fixated significantly less on the mouth than did the low and intermediate-level learners. These results show language proficiency modulates visual exploration of a talking face, yet never reaches the eyes-preference pattern of a native speaker.

Keywords: face perception, Hidden Markov Model, HMM, language proficiency, speech perception
Bilingual language choice is affected by external primes and individual language preferences

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Bilinguals living in a bilingual society often have to choose which language to use. Previous studies have suggested that language choice can be affected by external primes such as non-linguistic cues associated with a specific language. However, bilinguals may also have individual language preferences that can affect their language choice. In the current study, we therefore assessed how bilingual language choice is affected by both individual preference and external linguistic and non-linguistic primes. Sixty-four Spanish-Basque bilinguals were first asked to indicate their language preference for various items in a questionnaire. Two weeks later, they completed three picture naming tasks. In all conditions, they could freely name each picture in their language of choice. In one condition, participants only saw the pictures. In the other two conditions, each picture was preceded by a Spanish/Basque flag ('non-linguistic prime') or by a short sentence that the participant had to utter in Spanish/Basque ('linguistic prime'). Language choice in all three conditions was related to language preference: Pictures were named more often in a language if the participant preferred that language for that particular item. Similar effects were found for linguistic and non-linguistic primes, with items named more often in the language matching the prime. Effects of language preference and prime were additive such that a language was chosen most often if it matched both the prime and the bilingual's own preference. These results show that both external primes and individual language preferences contribute to the choice which language to use.

Keywords: bilingualism, language production, language choice
Native-like attainment is the ultimate goal of L2 learning. Two main research questions in L2 learning are (i) whether L2 learners can attain native-like proficiency and (ii) whether L1 and L2 syntax is shared or not. We tested very proficient (C1 level) non-native speakers of Basque (L1 Spanish) who acquired L2 early (3y.o.) while reading temporary ambiguous sentences in their L2. The ambiguous sentences were disambiguated at verb position towards a canonical SOV order or non-canonical OSV order by means of world knowledge.

(1) Otso/ardi hauek ardi/otso horiek jan dituzte zelai zabalean.
Wolf/sheep these sheep/wolf those eat have field wide-in-the
‘These wolves have eaten those sheep in the wide field’

We compared electrophysiological and behavioral responses of non-native speakers (L1 Spanish, nominative alignment, SVO) with the responses of a native group (L1 Basque, ergative alignment, SOV). Both groups performed indistinguishably in the behavioral task (more errors and slower reaction times in OSV than in SOV). Electrophysiologically, native speakers displayed a negativity 350ms after the onset of the disambiguating verb. Interestingly, non-native speakers showed a delayed latency after disambiguation: 400ms after the onset of the auxiliary (the word following the disambiguation point).

These results show that very early and highly proficient L2 speakers can differ from native processing. We argue this can only happen when core grammatical properties like argument alignment or basic word order are opposite in L1 and L2.

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Keywords: syntactic processing, ambiguity resolution, ERPs
Evaluation and revision in L1 and L2 text comprehension: An eye movement study

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We investigated how native English speakers (L1) and second language learners of English (L2) evaluate and revise information during discourse comprehension. This was done by monitoring their eye movements as they read narrative texts and critical sentences. In each text, a short introduction primed an inference, followed by a concept that was either expected (e.g. “oven”) or unexpected (e.g. “grill”) with that inference. Here, both L1 and L2 comprehenders detected a mismatch between the unexpected information and their prior interpretation, confirming that they have the ability to generate appropriate inferential information and evaluate this information during online comprehension. However, L2 comprehenders were less efficient doing so, as demonstrated by longer fixation times. Subsequently, a critical sentence included information that was either congruent (e.g. “roasted”) or incongruent (e.g. “barbecued”) with the expected but not the unexpected concept, or vice versa. L1 and L2 comprehenders spent less time reading the congruent than the incongruent condition reflecting the facilitation of prior information. More importantly, language differences were evident in relation to the revision process, where L1 comprehenders were better than L2 comprehenders at replacing a no longer relevant interpretation. Finally, individual differences in cognitive control and in L2 proficiency also explained differences in the revision process.

Keywords: text comprehension, bilingualism, cognitive control, L2 proficiency
— ABSTRACTS —

POSTER SESSIONS
Orthographic information facilitates L2 vocabulary memorization: Evidence of early accurate L2 orthographic representation among third grade monolingual children

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Early exposure to foreign language (L2) at school does not pass through sensitization to orthographic information. However previous studies highlighted an immediate facilitative role of orthography in mother tongue (L1) word learning (WL) with low frequency (Rosenthal & Ehri, 2008) and in pseudowords learning (Ricketts, Bishop, & Nation, 2009) among monolingual children using a paired associate learning paradigm (P.A.L). These studies contrasted two learning methods, both simultaneous presentation of spoken and written form (SWW) vs only spoken form (SWO) and focused on L1.

The present study explores whether and how orthographic information might facilitate L2 vocabulary memorization, especially at early stage of L2 WL, given that grapheme to phoneme correspondences differ in L1 and in L2.

Two learning methods were contrasted (SWW vs SWO) using a P.A.L paradigm to teach two groups of third grade (G3) monolingual children (N= 54 participants) 16 German words. Immediate and one week delayed session estimated the contribution of orthography on word recognition through a designation task but also the precision with which written form is represented through an orthographic judgment task.

Facilitative role of orthography was highlighted by higher recognition scores for both experimental task among children having attempted L2 WL with orthography. Interestingly SWW participants exhibited a large sensibility to the conservative written form of L2 WL compared to the transposed letter distractor. This effect was even stronger after one week delay, suggesting G3 children are already able to store and recognize an accurate written form representation at early steps of L2 WL.

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Keywords: bilingualism, vocabulary acquisition in foreign language, paired associate learning, orthographic facilitation, vocabulary memorization in second language

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[PI–03] Do bilinguals get less distracted? Results from an auditory-visual oddball task

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Forty-eight monolingual and 60 bilingual young adults performed an auditory-visual oddball task in which they categorized digits as odd or even while ignoring an irrelevant auditory stimulus presented shortly before each digit. Two blocks of 180 trials (B1, B2) were presented. In each block, 80% of trials included the same irrelevant sound (standard sound) while the remaining 20% of trials used a sound differing from the standard one by 200 Hz (deviant sound). Standard and deviant trials were ordered quasi-randomly, with at least one standard trial separating deviant trials. Bilinguals’ language switching habits were evaluated by means of a validated questionnaire. Deviant trials did not globally hinder accuracy but led to slower RTs, compared to standard and post-deviant trials, and responses were overall faster in B2 compared to B1. Bilinguals were more accurate in B2 than in B1, and showed enhanced accuracy after deviant sounds in B2, compared to monolinguals. Also, bilingual participants showed a tendency to maintain their response speed after deviant sounds during B2, but monolinguals were still slower after distracting sounds. Furthermore, bilingual’s frequency of voluntary language switching was associated to faster RTs to deviant sounds, whereas their frequency of unintended language switching was negatively correlated with accuracy scores. The results are interpreted in light of dual mechanisms of cognitive control and their relations with language experience.

Keywords: executive functions, language, deviancy, bilingualism, focusing
The bilingual advantage in within-language conflict resolution

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The bilingual advantage in cognitive control is a topic under debate. Some studies do not find differences between bilinguals and monolinguals in conflict tasks. We suggest that this pattern of results is mainly due to the lack of correspondence between the conflict situations that bilinguals experience on a daily basis (conflict due to the coactivation of linguistic information) and the tasks used to evaluate conflict resolution in bilinguals and monolinguals. In our study, we compared Spanish (L1) - English (L2) bilinguals and Spanish monolinguals in a semantic judgement relationship task in L1 that produced within-language conflict due to the coactivation of linguistic material. In the experimental task, homophone words were used with two meanings associated with each of the orthographic forms of the word (e.g., “callado” and “cayado”, silent and crook in English). In the conflict condition, one orthographic form of the homophone was presented (e.g., “cayado”) with an unrelated word (“ruidoso”, noisy in English) that was related to the alternative form of the homophone. In this situation (homophone related condition: “cayado”-“ruidoso”) the coactivation of the two homophone meanings would produce within-language conflict. The results revealed that, compared with a control condition without ambiguous words (e.g., “cayado”-“película”; crook-movie in English), all participants responded more slowly in the homophone-related condition. Importantly, however, this interference effect was greater in monolinguals (77 ms) than in bilinguals (33 ms). In view of these results, we suggest that bilinguals have a greater capacity for conflict resolution in within-language tasks.

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Keywords: bilingualism, cognitive control, bilingual advantage, conflict resolution
[PI–05] Seeing or acting? The effect of gestures on foreign language vocabulary learning

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In this study, we evaluated the impact of seeing vs. performing gestures on second language (L2) vocabulary acquisition. L2 vocabulary learning involved three training sessions conducted on three consecutive days during which Spanish monolingual speakers learned a set of 40 words (verbs) in an artificial language (Vimmi). During training, participants received the Spanish (L1) words and their L2 translations coupled with a video depicting different gesture conditions (congruent gestures, incongruent gestures, meaningless gestures and no gestures). Participants were divided in two experimental groups (seeing gestures vs. performing gestures). Half of the participants performed the gestures that appeared on the screen while reading aloud the L1-L2 word pairs (gestures performance condition). The remaining group read aloud the word pairs but they were instructed to observe the gestures without performing them (gestures viewing condition). After each learning session, participants performed a forward (L1-L2) and backward translation (L2-L1) task to evaluate the acquisition of new words in L2.

The accuracy analyses revealed that the performance of gestures facilitated the acquisition process when there was a match between the words and the meaning of gestures (congruent condition), compared to meaningless gestures or the condition with no gestures. This pattern of results suggest that the performance of gestures during L2 vocabulary acquisition facilitates the learning process by adding sensorimotor information to the meaning of words learned in L2.

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Keywords: bilingualism, language learning, L2 acquisition
Contrary to first language (L1) learning, second language (L2) learning is characterized by the importance of written modality – regarding oral one – in school context. Therefore, one might expect a modality effect, with written words being more accurately recognized than spoken ones, especially among low to moderate proficiency late L2 learners (see for trilinguals: Veivo & Jarvikivi, 2017). The first objective of this study is to highlight this effect. Furthermore, bilinguals recognize faster and more accurately cognate words (accident for French English) than non-cognate ones (Lemhöfer et al., 2008). Nevertheless, this cognate effect was studied only in written modality. Therefore, our second objective is to examine how modality interacts with cognativeness in the same group. For this purpose, we used lexical decision tasks (LDT), with the same stimuli in both spoken and written modalities, in order to check the word recognition gap between both modalities, among 49 French late learners of English. The LDT were conducted in L2. The first experiment included only non-cognate words (44 items), the second one used matched cognate and non-cognate words (30 items for each category). In both experiments, words and pseudowords were matched on length, neighbourhood and frequency. In both experiments, findings showed a modality effect (written words being better recognized than spoken ones), a session effect (indicating a transfer between modalities) but no interaction. A cognate advantage was observed in written but not in spoken modality, and for accuracy only. Results are discussed according to different psycholinguistic models of word processing in L2.

Keywords: visual word recognition, bilingualism, modality, lexical decision, university students
Many studies exploring bilingual language control have shown that cognates are named faster than non-cognates, revealing that the co-activation of a translation equivalent elicits facilitation at the phonological level with no interference at the lexical level. However, most of this research has focused on isolated word production which might not realistically reflect cognitive demands in sentence production. Here, we explored whether translation equivalents elicit conflict at the lexical level – by means of the error rates during sentence production – and whether they compete for selection – by means of error type.

Twenty highly-proficient Spanish-English bilinguals described visual scenes with sentence structures ‘NP1-verb-NP2’ (NP = noun-phrase). Half the nouns and half the verbs were cognates. Two manipulations created high conflict: NP1 and NP2 were semantically-related creating higher conflict on NP2. Half the actions were ambiguous until the action was completed (e.g., “pass behind”/“disappear behind”), creating high conflict on ambiguous verbs.

We observed that cognates elicited more errors than non-cognates and that the effect was maximized on NP2 and ambiguous actions, suggesting an increased level of conflict for cognate naming. Furthermore, errors were exclusively within-language (no translation equivalent error), suggesting that translation equivalents did not compete for selection.

Our results suggest that the phonological facilitation observed during cognate production in picture naming may have masked the interference created by the co-activation of two lexical items. When produced in sentential contexts with higher lexical retrieval demands, cognates produce a net interference effect, and the system keeps the other-language intrusions to a minimum.

Keywords: sentence production, error rate, bilingual control, interference, lexical selection
How language type influences patterns of motion expression in bilingual speakers

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Expression of motion shows systematic inter-typological variation between language types, especially with respect to the encoding of path and manner of motion. Speakers of satellite-framed languages (e.g., English, German, Polish) frequently conflate manner and path into a single clause, while verb-framed language speakers (e.g., Turkish, Spanish) typically convey path and manner in separate clauses (Slobin, 2004; Talmy, 2000). We have evidence from previous work that the effects of inter-typological variation also become evident among bilingual speakers who tend to have difficulties in adjusting to the lexicalization patterns of a typologically distinct L2 (Cadierno, 2017). However, less is known about intra-typological variability within each language type, particularly for the expression of motion events among bilingual speakers. In this study, we examine motion descriptions produced by two groups of bilinguals—with Polish as first language—learning a second language that belongs to the same (Polish-German) or a different language type (Polish-Spanish), comparing them to monolinguals in each language (German, Spanish, Polish). Our results, based on written descriptions of animated motion scenes, provided evidence for both inter-typological and intra-typological variation in the expression of motion, with greater alignment to L1 patterns in learning a language of the same type, and closer attunement to L2 patterns in learning a language that belongs to a different language type.

Keywords: motion events, bilingualism, intra-typological variation, inter-typological variation, verb-framed, satellite-framed
Motor inhibition interferes with subsequent comprehension of sentential negation. An ERP study

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Recent studies demonstrated that comprehension of sentential negation impacts subsequent motor inhibition, as reflected in reduced N2/theta oscillation in the Go/NoGo task and enhanced N1 in the stop-signal task. The Response Inhibition in Negation (RIN) hypothesis is thus proposed, indicating that sentential negation reuses the neural mechanism of response inhibition. However, extant studies laid emphasis on the modulatory effect of sentential negation on motor inhibition, without touching the reverse side of the issue. In an ERP experiment, we tested whether motor inhibition modulates subsequent comprehension of sentential negation. Participants performed a Go/NoGo task before reading sentences in affirmative or negative form (“now you will cut the bread” vs “now you will not cut the bread”). ERP analysis revealed that N400 of the verbs were significantly enhanced in NoGo-negative condition compared to Go-negative condition. Given the fact that N400 amplitude correlates positively with the difficulty of semantic integration, our result indicates that negative sentences are more difficult to comprehend in NoGo than in Go condition. This suggests that comprehension of sentential negation consumes neural resources of motor inhibition. The competition for the inhibitory neural resources by motor inhibition (involved in NoGo condition) and negation comprehension resulted in increased comprehending difficulty in NoGo-negative condition.

Keywords: inhibition, negation, ERPs, N400

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A common assumption in the literature on metaphor processing is that metaphoric statements convey abstract target concepts by mapping them to concrete source concepts. In our current research, we explored this assumption by means of a series of questionnaires intended to test the relative contribution of concrete and abstract topics and vehicles of nominal metaphors (e.g. “A is a B”) to figurative understanding. Since the concrete-abstract dimension is continuous rather than discrete, we selected a sample of Spanish nouns from the Guasch et al.’s (2016) database, broken down into three categories along the concreteness continuum, i.e. abstract, intermediate and concrete, and combined them to form 9 types of novel metaphorical statements based on the concreteness values of their constituents. With these materials, we designed three Likert-type questionnaires with 5-point scale items, and two open-ended questionnaires, and administered them to groups of native Spanish speakers to collect responses involving the following judgments: (1) degree of metaphorical meaning of sentences; (2) semantic relatedness of metaphor vehicles to concrete (literal) and abstract (figurative) words; (3) semantic relatedness of the same vehicles embedded in sentences to literally and figuratively associated words; and (4) interpretation of the intended meaning of these sentences by requesting semantic features of metaphor vehicles and paraphrases of the whole statements. Results show an overall preference for concrete words as metaphor vehicles, but a significant contribution of intermediate and abstract vehicles to figurative meaning, and a complex and interesting interaction of the concreteness level of topics and vehicles in metaphor understanding.

Keywords: metaphor, concrete-abstract words, questionnaire study
The role of world knowledge in the interpretation of cataphoric PROs

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While the interpretation of anaphoric elements has become one of the main research topics in psycholinguistics, another form of linguistic co-reference has received far less attention, namely, cataphoric reference or backwards anaphora, in which the pronoun appears before its antecedent. As it is well known, the null pronoun PRO can be both anaphoric or cataphoric. Some theories postulate that the antecedent of cataphoric PRO must be the sentence topic, that is, an entry in the common ground of the conversation, on which the current sentence makes a comment (Kawasaki, 1993). On the other hand, the NP in the subject position of the main clause seems to be clearly preferred as the antecedent of PRO (Carminati, 2002). The present self-paced reading study aimed to examine the interplay between world knowledge and syntactic information in the co-indexation of cataphoric PROs. All sentences started with a subordinate clause with a PRO, followed by the main clause containing the antecedent. Some sentences presented a typical antecedent for PRO in the subject position of the main clause, while others presented an atypical antecedent in this prominent position (After PROi killing the victim, the criminali/journalisti realised that the journalist/criminal had seen it all). Results show an effect of typicality in the subject position, pointing to the influence of world knowledge in the interpretation of cataphoric PROs.

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Keywords: world knowledge, event knowledge, cataphor, PRO, selectional restrictions
[PI–12] A quantitative model of Questions Under Discussion

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Understanding discourse requires a model of the topics or questions around which it is organized. The notion of ‘Question Under Discussion’ (QUD; e.g., Roberts (2012) Information Structure: Towards an integrated formal theory of pragmatics) increasingly plays this role. However, for QUD-based theories to yield testable predictions we must be able to estimate which QUD a participant is imagining for a given stimulus (e.g., Westera & Brasoveanu (2014) Ignorance in context). To that end we present ongoing work developing a statistical model of QUDs, and crowdsourcing a benchmark dataset of QUD-annotated discourse.

The core of our model is a state of the art language model (Peters et al. (2018) ELMO: Deep contextualized word representations), trained unsupervised on dialogue data from movie scripts. We use the model to estimate the conditional probability of a range of candidate QUDs given an utterance and a preceding discourse, and present a proof of concept by deploying it on a small, manually annotated dataset.

We crowdsource a larger dataset of QUD-annotated discourse as follows. Workers read a piece of television transcript, formulate one or more questions this evokes for them, read the remainder, and indicate which of their own questions were resolved and where. This is a more natural, crowdsourcable task than in existing work (Kuthy et al. (2018) QUD-based annotation), where expert annotators consider an utterance to determine which question it addresses (vs. evokes).

By presenting our ongoing work in Tarragona we hope to gain feedback and maximize the relevance of our approach.

Keywords: Question Under Discussion, language model, dialogue, crowdsourced annotation

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[PI–13] Spanish idiom database: Correlations between affective and psycholinguistic variables

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In a prior phase to this study, 1250 idiomatic expressions of Spanish were collected and afterwards rated by approximately 2000 native participants. Two affective variables (valence and arousal) and five psycholinguistic variables (familiarity, knowledge of expression, semantic transparency, literal plausibility and predictability) were subjectively evaluated. From the global data set, here we extract a correlational study in which we explore the type of association established between affective ratings (valence and arousal) and psycholinguistic ratings that measure the degree of ambiguity of idioms (semantic transparency and literal plausibility). Results show a moderate positive partial correlation between arousal and literal plausibility, as well as between arousal and semantic transparency. In the first case, the correlation suggests that the greater the literality of the idiom, the greater the level of activation. In the second case, the correlation suggests that the more transparent (inferred from the component words) an idiom is, the greater the level of activation it triggers. For valence, we have only found a slight partial positive correlation with familiarity.

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Keywords: idiomatic expressions, arousal, valence, semantic transparency, predictability
Iconic gestures facilitate word recognition: A cross-modal priming study with words

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Previous studies have shown that gestures related to speech facilitate language processing. Specifically, iconic gestures (IG) are closely linked to the semantic contents of speech that they accompany, both in form and time. IGs are gestures that illustrate or exemplify what is said.

Using a cross-modal semantic priming paradigm, in the present study we investigate the link between the IGs and words, differentiating the grammatical modality (verbs and nouns) preceded by gestures related or not to the words. A group of participants performed a primed lexical decision task where they had to discriminate between the words presented auditively and the pseudo-words. Words target (e.g., "push") were preceded by video clips showing semantically related gestures (e.g., the two hands from the chest extend forward, "push") or unrelated (e.g., joining the fingers of the hand while putting them in the mouth, "eat"). There was a big synchrony between the IG and the word. The dependent variables examined were response latency and accuracy rate. A clear effect of priming was observed, with words related to gestures being recognized faster than unrelated ones. Regarding grammatical modality, it was observed that verbs responded faster than nouns. However, no differences between both type of words were found in relation to the prime.

Results support the idea that the semantic system for gesture and speech are closely integrated, independently of the grammatical mode.

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Keywords: iconic gestures, semantic priming, lexical decision task
The Remote Associate Test (RAT) of Mednick (1962) is used by numerous researchers in creativity and more generally in language. Recently, the need to understanding the cognitive processes involved when completing the RAT (e.g., Marko, Michalko & Riečanský, 2018) highlights that a French adaptation is clearly missing. In this work, we propose to provide a French version of the RAT, based on the variant earlier proposed by Bowden and Jung-Beeman (2003) in which the solution is always connected by syntagma (i.e., forms a compound word) to each word of the problem. In our study, we had considered three forms of lexical binding between compound words – the answer was either a prefix/suffix of the problem’s words and formed an unified compound word (e.g., malheureux) – or a hyphen connected one of the problem’s word to the solution (e.g., porte-bagages) – or it was a detached compound word where the word was linked to the solution by a lexical term (e.g., eau de vie). Overall, we designed 98 problems based on 294 words (adjectives and nouns) issued from French language dictionaries (e.g., Larousse). 60 participants were faced to these problems and the experiment was carried out on a computer using OpenSesame software (version 3.2.5 – Kafkaesque Koffka – Mathôt, Schreij & Theeuwes, 2012). The analysis of the results will allow us to examine the reliability of the French test. Specifically, we will pay attention to the possible role of lexical, semantic and emotional variables (i.e., valence) regarding their respective power in predicting response times and accuracy.

Keywords: Remote Associate Test, creativity, language
Bilingual writing co-activation: Lexical and orthographic processing in a word dictation task

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In bilinguals, most evidence points out that the nonresponse language remains activated in parallel with the target language during reading, speaking and listening. However, in writing, language co-activation has not been largely studied. The aim of this study was to evaluate if there is bilingual language co-activation during both first (L1) and second (L2) language word writing. Spanish-English high proficient bilingual participants (n=22) carried out a dictation task in L1 and L2 with different conditions associated with orthographic complex graphemes: a) congruent-words with the same critical grapheme (e.g., surgery–cirugía); b) incongruent-words with different critical grapheme (e.g., ginger–jengibre); c) neutral-words without orthographic relation (e.g., turtle–tortuga). The same task was carried out by two groups of Spanish and English monolinguals as controls (both n=23). The onset of the first-key and offset of the whole word writing as well as track errors were recorded. In monolinguals, the analysis revealed no difference among conditions. In L2, bilinguals showed a better performance in first-key typing for the congruent condition. However, the performance of whole word typing was associated to a significant decrement for incongruent condition compared with the congruent and neutral conditions. In L1, bilinguals the effect of incongruent condition was observed in the first-key typing. Facilitation at onset followed by interference during word execution suggests that retrieval of lexical and orthographic operates differently in L1 and L2.

Keywords: bilingual language processing, language-selection mechanism, orthographic interference, orthographic facilitation, typing task
Incremental learning in word production: Tracing the fate of non-selected alternative names

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Picture naming studies have shown that alternative picture names become phonologically co-activated even when they are eventually not produced (e.g., “dog” when “poodle” is produced and vice versa). We investigated whether this pattern is shaped by recent experience. Specifically, we tested whether the phonological co-activation of an alternative name is attenuated, when speakers consistently only use one particular name in a large number of naming episodes. In three picture-word interference experiments we measured the phonological co-activation of basic-level alternative names during subordinate-level naming (Experiments 1 and 3) and of subordinate-level alternative names during basic-level naming (Experiment 2). We measured the co-activation of the alternative name at different points in time with distractor words that were phonologically related or unrelated to that name. If the pattern of lexical activation is shaped by previous naming episodes and the phonological co-activation of the non-produced alternative name decreases, interference from related distractors should be reduced in the course of the experiment. Contrary to this prediction, the interference effect from distractors phonologically related to the alternative name remained stable. This was also true when participants were not familiarized with the pictures, more naming episodes were implemented, and a consolidation phase was introduced (Experiment 3). Overall, these results indicate some limitation of incremental learning in word production.

Keywords: language production, lexical selection, incremental learning
The communication without words: A normative study for the Aragonese Portal of Augmentative/Alternative Communication (ARASAAC)

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Among all possible ways of responding to the basic need of human communication, pictographic language offers an extraordinary solution for many people with serious expressive or receptive communication disorders (e.g., people with autism spectrum disorders, aphasia, cognitive impairment, cerebral palsy, etc). The pictographic system called Aragonese Portal of Augmentative and Alternative Communication (ARASAAC http://arasaac.org), freely distributed under the Creative Commons License (BY-NC-SA), is an important reference in many countries, and in different areas such as education, hospitals, care for the elderly, adaptation of documents, accessibility of a means of communication, accessible tourism, or signage. Although these images are widely used, there are no previous studies on their reliability and validity. In order to obtain a useful tool in the clinical context, scores of name agreement, H index, tip-of-the-tongue responses, conceptual familiarity, image agreement, visual complexity, and response times were collected for the 295 most frequent images in the ARASAAC dataset. The psychometric analyses showed adequate validity and reliability values. The regression analysis indicated that naming times were explained by picture-name agreement, age of acquisition, and conceptual familiarity, while the tip-of-the-tongue states were mainly predicted by picture-name agreement and name agreement. In conclusion, the current dataset provides valuables indices to be employed in different speech-related domains from clinical intervention to psycholinguistic research.

Keywords: augmentative and alternative communication, pictographic system, picture naming, Spanish normative study, language production
We studied the phonological processing of people with and without dyslexia through a phonological version of the Deese/Roediger-McDermott false memory task. The false memory effect is assumed to reflect the spreading of activation from the presented stimuli to similar words in the lexicon. We assessed 35 volunteers with dyslexia and a group of matched controls with ages ranging from 6 to 58 years. They were first presented with six lists of ten two-syllable words each, all of which shared one syllable with a reference unpresented word. Then, they answered a recognition questionnaire including 24 presented words, 18 phonologically related unpresented words and 12 unrelated unpresented words. True recognition of presented words increased with age in both the dyslexia and control groups. In contrast, false recognition of phonologically related words increased with age in the control group but stayed at very low levels in the dyslexia group. Our study points out the existence of a deficit in the spreading of phonological activation in people with dyslexia through the lifespan.

Keywords: dyslexia, phonological deficit, false memories
Evidence for a role of memory in novel word-learning deficit after perinatal stroke

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Perinatal arterial ischemic stroke (PAIS) occurs in about one in 4000 births and can have long-term negative effects on cognitive and language development. As opposed to stroke occurring during adulthood, PAIS over the left hemisphere generally does not induce post-stroke aphasia, even though subtle language production deficits may be observed. However, very little is known on the impact of PAIS on novel word-learning abilities during pre-school age. Fast-mapping abilities are considered to reflect crucial processes underlying vocabulary acquisition in early childhood and may thus hinder word-learning abilities. Here, nine children with PAIS and 10 healthy controls were required to learn four novel words from a single fast-mapping trial followed by some supportive strategies (two repetitions and one production of the target labels). Following the mapping phase, children were required to evaluate different label-object associations and to recognize specific phonological information to make the right selection of the target objects during both an immediate and a delayed recall test. Results showed that both groups succeeded in the mapping phase suggesting that PAIS may not impair the encoding and mapping of novel label-object associations. Results from the immediate recall test phase showed no between-group difference. Interestingly however, children with PAIS showed significantly lower recall performance than controls in the delayed test. These results suggest that PAIS can negatively impact word-learning abilities by specifically hindering recall of newly learned label-object associations.

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Keywords: word learning, fast-mapping, perinatal stroke, language development
[PI–21] Relationship between reported oral language difficulties and the risk of bullying in the primary schooling stage

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Students with language difficulties (LD) present multiple adjusting problems that manifest in heterogeneous areas. In terms of social skills, they exhibit deficiencies that begin in infancy and intensify towards adolescence (Durkin & Conti-Ramsden, 2010; Valera-Pozo et al., 2016), an aspect that might increase their risk of bullying victimization (Durkin & Conti-Ramsden, 2007, 2010; Rice, 2016). The aim of this study was to examine the relationship between LD and risk of bullying in Spanish students at the primary school stage. For this purpose, several schools in Balearic Islands were asked to participate in the study. In a first phase, 24 students ($M = 10.8$ years) with oral LD, as characterized by the reports of the hearing and language specialists of the schools, were recruited and matched with a control group. To assess the risk of suffering bullying situations, we administered the victimization scale of the Spanish version of the European Bullying Intervention Questionnaire (EBIPQ; Del Rey et al., 2012). Analyses indicated that reported oral LD was associated with a 5-fold increase in the likelihood of suffering bullying ($OR = 5$; 95%CI = 1.54–16.26). Further comparison tests showed that participants with LD had higher scores on this scale ($p < .011$). Our results support previous evidence revealing that presenting LD increases the proneness of suffering bullying. These preliminary results should be taken into consideration in order to further research on topics focused on the assessment of mediating factors in the appearance, maintenance and repercussions of bullying in this particularly vulnerable population.

Keywords: language difficulties, bullying, oral language, victimization


[PI–22] **Parafoveal processing in mildly aphasic readers**

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Previous studies of silent reading in aphasia have shown that aphasic readers benefit from top-down facilitation during word and sentence reading. These eye-tracking experiments showed that during foveal processing the effect of contextual predictability, where the predictable words are processed faster, was greater for aphasic readers than for neurologically healthy readers at some measures. The present study targets parafoveal processing in mild aphasia. The invisible boundary paradigm (Rayner, 1975) was utilized with two types of parafoveal previews: identical and unrelated to the target. Eight aphasic and twelve non-brain-damaged readers participated in the eye-tracking experiment. The results showed that people with mild reading impairments make use of information in the parafovea and exhibit significant parafoveal preview benefits. Furthermore, mildly aphasic readers do not receive additional facilitation from sentence context compared to healthy readers, probably because they use a parafoveal processing strategy that is not very different from healthy readers. Possible explanations for the absence of top-down facilitation and implications for future research are discussed.

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**Keywords:** parafoveal processing, aphasia, predictability, reading, eye movements
[PI–23] Linguistic markers for the early detection of Alzheimer’s dementia: The role of pauses in mild cognitive impairment

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Introduction: Studies on speech in Mild Cognitive Impairment (MCI) have yielded promising results for the early detection of Alzheimer’s Dementia (AD), particularly those focused on automatic detection, with a growing consensus on higher pause rate and longer pause duration as reliable diagnostic features. However, qualitative analyses are necessary to establish the cognitive and anatomical bases for the observed verbal behaviour.

Methodology: Picture-based narratives were transcribed with an ad-hoc system for pause labelling, allowing for classification according to structural position and the computation of mean duration and variability index. The cohort included 24 mildly-impaired AD patients, 22 multifocal amnestic-temporomesial (aMCItm, more prone to develop AD) and 29 multifocal amnestic-executive (aMCIex) MCI subjects and 16 healthy elderly controls (HC).

Results: As expected, longer mean pause duration and lower voice-to-silence ratio in AD as compared to HC constitute reliable markers. Although general pause rate did not reveal significant differences, AD patients produced significantly more interclausal pauses and less intraclausal ones. aMCItm and AD patients revealed a significantly higher variability index in pause duration. All pathological groups produced a significantly lower rate of interclausal pauses preceding correct clauses, but only AD and aMCItm produced a higher rate of interclausal pauses preceding incorrect clauses, revealing probable deficits in discourse and/or syntactic planning. AD patients also showed a significantly higher rate of interclausal pauses preceding irrelevant utterances, indicating problems at the discursive level. Intraphrasal pauses failed to yield statistically significant results, showing no clear link between pause position, rate and duration and lexical access.

Keywords: Alzheimer’s dementia, mild cognitive impairment, speech production, pauses

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Cross situational statistical learning (CSSL) is a fast-mapping mechanism that extends over multiple encounters trying to simulate an everyday context where the ambiguity and the exposure to different words and possible referents at the same time is usually presented (Smith & Yu, 2007). Past research has shown children with SLI have difficulties to solve tasks that require sequential implicit learning (Ullman & Pierpont, 2005). The aims of this study were to investigate whether bilingual Catalan-Spanish children with SLI can solve a word-mapping non-declarative task that is not sequential in time and to investigate whether they differ from TD children in the moment-by-moment visual attention pattern while performing the task. Seventy-six children, 38 children with SLI (M age=8.7 years), and 38 age/gender-matched TD children (M age=8.9 years) participated in the study. Behavioral data: results for the group of children with SLI were significantly poorer than the group of TD children. Eye-tracking data: TD children but not children with SLI showed a clear pattern of looks from the left-to-right through the learning phase that permitted them to extract the embedded frequencies in the input. Moreover, TD children showed higher proportion of looks to the target through the testing phase in comparison to children with SLI. These results suggested there are differences between children with and without SLI in the online cognitive process when learning and interpreting novel words implicitly. Moreover, children with SLI may have less efficient mechanism to the visuospatial process to extract regularities embedded in a CSSL task.

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Keywords: specific language impairment, word learning, statistical learning, eye-tracking
[PI–25] Acquisition of words emotional meaning in two contexts: Faces and phrases

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This study used a contextual learning paradigm to investigate the acquisition of words emotional meaning using two different associative contexts: emotional face expressions or emotional language. Participants were divided into two learning modality groups, in which the same meaningless pseudowords were repeatedly paired with emotional faces or with emotional phrases, respectively. We examined participants’ acquired meaning by testing them in the same learning modality (e.g., learning faces and testing pseudowords with a new set of emotional faces), and also testing their cross-modal generalization (e.g. learning faces and testing pseudowords with linguistic phrases). Results showed that the two groups of participants performed equally well in the same-modality tests (‘learning faces-testing faces’ and ‘learning phrases-testing phrases’), indicating successful learning in the two modalities. However, in the cross-modal tests, the faces group outperformed the phrases group (‘learning faces-testing phrases’ > ‘learning phrases-testing faces’). We conclude that both contexts are effective for acquiring words emotional meaning, although learning in the faces context is more versatile or generalizable.

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Keywords: emotion, context, face, phrase, word
Empirical findings across a variety of paradigms attest memory benefits for emotional words in monolingual (Kensinger & Corkin, 2003) and in bilingual populations (Ferré et al., 2010, 2013). However, it is still unclear to what extent there are asymmetries between positive and negative valence (Ayçiçegi & Caldwell-Harris, 2009; Ferré et al., 2013) or to what extent valence influences acquisition of novel vocabulary items. In this study we explored the effects of valence on the learning of lexical collocations (conventionalized word strings such as to make progress) in the second language (L2). Subjects were a group of Spanish-English bilinguals who acquired their L2 in an instructed setting. The subjects viewed, in the counterbalanced order, two short videos flooded with novel neutral, positively-charged (video 1) and negatively-charged (video 2) vocabulary items. The target items differed in valence, but were matched on other relevant lexical variables. In the immediate post-test, the highest scores in the recall were for negative collocations, followed by the positive collocations. The differences in the scores between negative and positive items lost significance in the delayed post-test, but the advantage over the neutral collocations remained. Taken together, our results suggest a facilitative effect of valence on the acquisition of new L2 vocabulary items presented in natural samples of language. Our findings of the superiority in recall of negative items at the initial stage of learning disconfirm recent claims of the risk of emotional disembodiment for negatively valenced L2 words (Conrad, Recio & Jacobs, 2011; Sheikh & Titone, 2016).

Keywords: emotional words, memory, second language learners, vocabulary
Recently, a study by Champoux-Larsson and Dylman (2018) showed that the bilingual advantage previously found in the use of emotional prosodic cues in children to infer a speaker’s emotional state (e.g., Yow & Markman, 2011) was driven by a bias towards prosody. Namely, the higher level of bilingualism the participants in Champoux-Larsson and Dylman (2018) had, the more they had difficulty ignoring prosodic emotional cues in spoken words even when they were asked to focus on the semantics of the words. While Misono et al. (1997) found that monolingual adults rely on both semantic and prosodic cues to determine emotion in speech equally, it is not known yet whether this also is true for bilingual adults. In other words, it is unclear whether the prosodic bias found in bilingual children withstands even in adulthood for bilinguals.

Thus, we present a study where adults with varying levels of bilingualism were asked to determine the emotional valence of utterances based on the participant’s general impression (i.e., without specifying which cue to use), based on the utterance’s emotional prosody or based on its semantic content. The spoken words’ semantics was positive, negative or neutral and the words were uttered with either a congruent emotional prosody or with an incongruent emotional prosody. Data is currently being prepared for analysis and results will be available within the coming weeks.

Keywords: emotional prosody, prosodic bias, bilingualism, emotion
[PI–28] Increased gamma frequency synchronization for fear relative to anger-related words

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There is evidence that gamma band activity is involved in the visual perception of emotional stimuli. In particular, a greater synchronization has been described following the processing of emotional compared to neutral faces. Among these results, of particular interest is the role of gamma frequency during the processing of threatening stimuli. In this regard, some studies have revealed differences in the spatiotemporal occurrence of gamma band for fearful and angry faces. However, much less is known about the processing of words related to distinct negative emotions. Using an approach-distancing decision task (ADDT), where participants were explicitly asked to focus on the approach-distancing dimension, we investigated gamma band activity during the processing of fear and anger-related words. Cluster-based analysis revealed a stronger gamma band synchronization (30-50Hz) for fear-related words in comparison to anger-related words over fronto-central regions of the left hemisphere between 700 to 750 ms. Since this activity appeared late in the epoch and close to reaction times it was suggested to reflect a decisional process about what action to take. In this sense, the stronger involvement of gamma band during the presentation of fear-related words may represent an internal conflict about the response to emit between an active-withdrawal motivational component (i.e., a flight/escape response) and a passive-withdrawal motivational component (i.e., a freezing response). Such conflict would not appear in response to anger-related words.

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Keywords: discrete emotions, words, EEG, gamma frequency
Disentangling the effects of production and speaker variability on word learning

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Does saying a new word out loud help to learn it better? Previous research on the effect of production on word learning is inconclusive. One issue is that production can be confounded with speaker variability, because when a word is produced it is also unavoidably heard by an additional speaker. To address this issue, we disentangled the effects of production and variability. Participants learned a set of new words along with their visual referents in one of three training conditions: a. hearing it by the same speaker (hear-only condition), b. hearing it by different speakers (variable hear-only condition), or c. hearing it and producing it themselves (variable hear-and-produce condition). At test, participants heard each newly learned word and were asked to click on its visual referent in a 2AFC task. In addition to accuracy and RT measures, participants’ eye-movements to the target image were collected and used as a measure of target activation in real time.

Comparing the hear-only to the variable hear-and-produce condition allows us to evaluate the cumulative effect of production and variability; comparing the hear-only to the variable hear-only condition allows us to evaluate the independent effect of variability; and, lastly, comparing the variable hear-only to the variable hear-and-produce condition allows us to evaluate the independent effect of production. Together these comparisons allow us to evaluate the effects of production and variability both independently and cumulatively.

Keywords: word learning, production, variability, eye-tracking

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Learning novel concepts in the native language: The role of emotional valence and concreteness

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The acquisition of new words is a prominent topic in bilingual research, where researchers try to identify the variables that ease the process of integrating words from the language being learned with the lexical and conceptual systems of the first language. Creating new concepts and associating them with new words are processes that monolinguals also keep doing along all the lifespan, but the study of the variables that improve such learning have received far less attention. The aim of the present work was to study the way in which new concepts and their verbal labels are integrated into the mental lexicon of the native language, focusing on two main variables: the emotional content of words, and their degree of concreteness. With this aim we carried out two experiments where participants had to learn new made up concepts in Spanish (through their definitions) which were randomly associated to pseudowords. In both experiments we used a factorial design manipulating concreteness (concrete vs. abstract concepts) and emotional valence (neutral vs. emotional concepts). We investigated positive concepts in Experiment 1 and negative concepts in Experiment 2. Results showed a concreteness effect in both experiments: concrete concepts were learned better than abstract ones. Concerning emotional valence, a significant effect was found only for negative valence (Experiment 2). Importantly, the effect was modulated by concreteness: concepts with negative valence were learned better than neutral ones when they were abstract, but when they were concrete emotional valence impaired learning rather than favouring it.

Keywords: new concepts acquisition, emotional valence, concreteness
Processing of inflectionally ambiguous word forms suggests existence of 'non-finite' word class category

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In a visual priming study we investigated the relation of form-identical word forms with different grammatical functions in adult natives (N=71) and advanced (B2-C1 level, N=70) second-language learners of German.

Prime and target were phrases that were each presented in two steps. The first step of the target phrase (S1) was always the personal pronoun wir (‘we’) and in the second step (S2), there was always the corresponding conjugated verb form, e.g. SPIELEN (‘play’). Through manipulation of the syntactic context in S1 of the prime, following six prime conditions were created: identical (prime=1st p.pl. like target), inflected (prime=3rd p.pl.), conversion (prime=converted noun), infinitive (prime=infinitive), countable noun (prime=countable noun in Dat.Pl., e.g. (mit den zwei) SPIEL-E-N), unrelated (prime=different verb).

Results revealed full priming in the inflected condition, but only partial priming for conversion and infinitives. No priming of semantically related, formally identical countable nouns suggests that they have separate lexical entries. The findings bring first psycholinguistic evidence for typological claims that deverbal conversion nouns and infinitives fall into the same category of non-finites (see Ylikoski, 2003, for an overview). They also support accounts assuming representations with a basic lexical entry and word-category specific subentries (e.g. Bauer & Valera, 2005). Other hypotheses regarding the representation of conversion, such as separated lexical entries, storage of word-class neutral stems, or zero-derivation as a productive process, were not supported by our data. We observed the same priming pattern for both L1 and L2 speakers indicating that representation and processing of morphologically complex forms is not fundamentally different in L1 and advanced L2.

Keywords: non-finite forms, morphological processing, word class, priming
In two event-related potential studies, we investigated the processing of sentences with prefixal negation (*unauthorized*), sentential negation (*not authorized*) and no negation (*authorized*). We asked whether prefixal and sentential negation resulted in delayed processing. In Experiment 1, sentences such as “The White House announced that the new Obama biography was *authorized/unauthorized/not authorized* therefore the details in the book were *correct/wrong* in actual fact” were presented visually word by word and were followed by a forced binary-choice task (“Did the sentence make sense?”). The underlined words indicate the manipulations and the bold words indicate the critical words. In Experiment 2, the same sentences were presented auditorily. In both experiments, ERPs to the critical words were analyzed. The results suggest that in both experiments, the False version of non-negated sentences (*authorized combined with wrong*) elicited a larger N400 and P600 than the True version (*authorized combined with correct*). Sentences with prefixal and sentential negation in the visual experiment were related to slower processing suggesting a delay in integrating negation. However, in the auditory study, False sentences elicited increases in the P600 suggesting that both negation forms were successfully processed. The difference in processing the negated forms between the two modalities could be explained by the fact that the auditory paradigm allowed for a faster presentation and participants could thus keep the negated forms in working memory, while the visual study was, due to a slower presentation, more demanding on the working memory requiring an activation of the negated meanings as the critical words appeared.

Keywords: negation, ERPs, EEG, processing cost, processing difficulty
[PI-33] The role of grammatical gender in predictive processing in Russian

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Previous studies have shown that adult and child native speakers can use grammatical gender cues to predict upcoming nouns in online sentence interpretation (e.g. Lew-Williams & Fernald, 2010; Brouwer et al., 2017). This type of research mostly focused on gender-marked articles in Roman and West-Germanic languages. In the current study we looked at gender-marked adjectives in Russian.

Participants were adult (N=31) and child native speakers of Russian (N=49) of varying ages (range = 2.0 to 7.0). In a looking-while-listening paradigm, participants heard simple questions (e.g. ‘Where is the pretty green chair’) and saw two pictures on the screen. One picture was the target (e.g. chair) and the other the distractor of either the same (e.g. ball) or different gender (e.g. book). All questions contained two gender marked adjectives followed by a noun.

We hypothesised that participants would look more and faster at the target picture in the different gender than the same gender condition. Furthermore, our analyses examined whether they could use gender-marking anticipatorily (i.e. before the onset of the noun) or facilitatively (i.e. after the onset of the noun).

Mixed-effects logistic regression analyses revealed that adults anticipated the upcoming noun, whereas children were not able to anticipate the noun before its onset. However, they showed a facilitation effect from noun onset onwards. Subsequent analyses on the child data suggested that the facilitation effect increased with age. The results of our study extend and improve existing theoretical knowledge regarding the role of grammatical gender in online sentence processing.

Keywords: grammatical gender, Russian, predictive processing, facilitation, anticipation

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[PI–34] My fear - The happiness: Affective judgments of emotional and neutral words varying in self-reference: comparison between German, Spanish and English language

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Where are the emotions in written words? Theoretically, different opinions still exist, favoring cognitive or embodied theories of language processing. Previous studies found similarities in the way people affectively judge pictures, faces and words of emotional and neutral content supporting the theoretical notion that affective judgments of verbal and non-verbal stimuli may be driven by the same underlying - possibly embodied- mechanisms. Similarities in affective word ratings have also been reported across languages and effects of linguistic parameters (e.g., word-frequency, concreteness) on affective ratings have been documented. Nevertheless, the influence of the salient linguistic factor self-reference has not been examined so far, despite its proven impact on affective processing and the subjective experience of emotions. The present multicenter study extends previous word corpora studies by investigating the extent to which affective ratings are influenced by the self-reference and the emotionality of a word in English, German and Spanish. About 2000 nouns were collected. Words with the highest interrater-reliability across languages were chosen and paired with possessive pronouns of the first person or with articles devoid of self-reference. The pronoun-noun and article-noun pairs were rated by native speakers of each language on emotional valence, arousal, dominance, and concreteness. Valence, arousal and dominance ratings were based on the non-verbal Self-Assessment Manikin Scales asking participants to rate how they feel while reading the word pairs. We expect self-reference to have an impact on all affective and non-affective rating dimensions. First preliminary data from ratings of all three languages will be presented.

Keywords: emotion, language, affective judgments
[PI–35] How much can you see? Individual differences in parafoveal perception during reading

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During reading, we simultaneously perceive, process and integrate information that is presented both in foveal and parafoveal visual regions. However, the amount of information that can be obtained from the parafovea is determined by several factors, including the visual-attention processing of each specific reader. Although past research has addressed this topic through studying different perceptual spans and how intrinsic properties of a task can modify them, less attention has been allocated over the relationship between individual differences and reading performance. In this research, we estimated the perceptual, visual, visual attention and working memory span of the participants through standardized tasks. Participants also filled in questionnaires to estimate their reading skills, as well as their reading habits, video gaming and sports routines. Additionally, we used the co-registration of eye movements and EEG measures to obtain Fixated Related Potentials (FRP) associated to parafoveal processing during a task of word pair reading. These measures were used as markers of the participants’ ability to process and integrate the lexico-semantic information of the parafoveal region. Our results show correlations between individual characteristics, perceptual spans and parafoveal processing as determined by EEG measures.

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Keywords: parafovea, reading, FRP, individual differences
[PI–36] Response congruency effects in masked priming lexical decision

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The influence of how a masked unrelated wordlike/unwordlike prime affects the processing of target stimuli in lexical decision has been a relatively overlooked question. If participants apply to the primes the same instructions as to the targets, one would predict a response congruency effect (e.g., faster responses to book-TRUE than for fiok-TRUE). Importantly, this phenomenon can be used to disentangle the predictions of two leading models of word recognition: whereas the Bayesian Reader model predicts a null effect from the wordlikeness of the unrelated primes, interactive-activation models offer more flexible predictions. We conducted four masked priming lexical decision experiments with four unrelated priming conditions differing in wordlikeness (from high-frequency words to consonant strings). The foils were wordlike nonwords in Experiments 1 and 4, illegal nonwords in Experiment 2, and orthographically legal hermit nonwords in Experiment 3. Unlike Experiment 1-3, the targets in Experiment 4 were repeated four times. We found an effect from the unrelated primes when the foils were illegal and the primes consisted of consonant strings (Experiment 2) and when the targets were repeated several times (Experiment 4). However, we found no signs of an effect in the standard scenario (i.e., orthographically legal nonwords as foils with no repeated targets). We discuss the implications of these findings for the Bayesian Reader model and interactive-activation models.

Keywords: lexical decision, masked priming, word recognition
[PI–37] An ERP analysis of relative clauses in Turkish: Subject relative clauses favored

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Studies on the processing of relative clauses (RCs) across languages revealed that Subject Relative Clauses (SRCs) are easier to process than Object Relative Clauses (ORC). Two recent reading time studies on Turkish support this conclusion, though they differ in terms of where a slow-down in reading is observed; on the RC-verb and/or the head noun/filler. This study aimed at addressing this issue along with the general question of whether ORCs are more difficult to process than SRCs in a head-final language like Turkish by using the ERP methodology.

Grammatical Function (GF) (subject, object) × Clause Type (SRC, ORC) × A(nterior)P(osterior) distribution (frontal, parietal) × LAT(eralization) (left, right) factors are used in the statistical analysis. In the first time window, while a P200 component is formed, the difference that the GF is $F(1,31)=4.032$, $p<.05$, and Phrase Forms are $F(1,31)=10,849$, $p<.01$. In the second time window, a LAN component is observed, and a significant difference of $F(1,31)=5,589$, $p<.05$ occured in the interaction between clause type $F(1,31)=5.283$, $p<.05$, and GF x Clause Type. In the last time window, a difference $F(1,31)=4.530$, $p<.05$ was observed in the interaction between GF and Clause Type, and a late LAN component was present.

To summarize, (i) ORCs are more difficult to process than SRCs, (ii) the difficulty in processing was in the head noun region/filler of RCs, and (iii) the processing of RCs is sensitive to the GF of an RC for a difference between SRCs and ORCs was observed when they were subjects whereas no such difference was observed when they were objects.

Keywords: relative clause, neurolinguistics, event related brain potentials, time-frequency analysis
Are visual cues used in the discrimination of vowel and fricative native contrasts?

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Speech perception can be described as a multisensory process. Attention to visual articulatory cues of the speaker contributes to speech comprehension and phonetic discrimination in different contexts, as for instance in speech-in-noise situations (Vatikiotis-Bateson et al., 1998). Research has also shown that bilingual adults use visual cues to discriminate difficult phonetic contrasts of their non-dominant language (Navarra & Soto-Faraco, 2007). The present study explores the use of visual articulatory cues to discriminate perceptually close L1 contrasts. A pair of voiceless fricatives (Experiment 1, /fət/-/sət/) and a pair of vowels close in phonetic space (Experiment 2 [/də/-/dəu/]), were selected as target contrasts. A total of 384 naturally produced syllables were obtained from audiovisual recordings of four native Spanish speakers. This material was used to explore phoneme identification in the visual, auditory and audiovisual modalities. Adult participants (N=33 in each experiment) were requested to identify the target segment in a random presentation of 192 trials involving the three modalities. Results from each experiment showed a significant main effect of modality ($p < .0001$) and a significant modality x phoneme interaction ($p < .0001$). Post-hoc tests revealed a general lower accuracy in the visual modality and no differences between auditory and audiovisual conditions. Higher accuracy in the audiovisual modality was only found for /u/ identification. Data indicate that visual cues alone offer less reliable information for phoneme identification in normal-hearing adults. The audiovisual modality produces some gains, but restricted to specific phonemes. Factors contributing to this limited effect will be discussed.

Keywords: multisensory, audiovisual, phonetic, discrimination
[PII-01] Phonological processes of L1 when handwriting words in L2

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The goal of the present study was to investigate whether phonological processes of L1 are applied when writing words on a second language. More specifically, we focus on syllabic processing. Previous studies have found that the process of handwriting is influenced by the syllabic structure of the words to be written, mainly in Spanish and other languages with clear syllabic structures.

We selected three groups of participants, with different levels of English: native speakers of Spanish with a basic level of English, native speakers of Spanish with a high level in English and a group of English native speakers as control.

The participants were faced with a task of writing English words that would have two syllables if read in Spanish (BASE), as opposed to words that would have one syllable in both languages (BASH). Both are monosyllabic in English. Both type of words were matched on several psycholinguistic variables. The words were presented visually and the participants have to write them on capital letters on a graphical tablet. Several online chronometric measures were taken, including latencies, letter durations and inter-letter intervals.

The results showed that writing times were greater for the first type of words (bisyllables) than for the second in the basic level group. In the advanced level we also find the same effect but to a lesser extent.

Our results suggest that phonological processes developed in L1 are employed when writing in L2 and that these L1 influence lasts for some time.

Keywords: phonological processes, handwriting words, second language learning

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Does orthographic cue help children to learn vocabulary in L2? A spoken word recognition study in French fifth graders

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Several studies have investigated the effect of written word form on learning new vocabulary in one’s native language. Most of these studies have highlighted a facilitative effect of orthographic cues (e.g. Ricketts, Bishop & Nation, 2009). However, whether this effect can be observed during the process of second language (L2) vocabulary learning is still debated (e.g. Hayes-Harb, Nicol & Barker, 2010). Given that L2 GPC differs from the L1 GPC, one might expect a competition effect between L1 and L2 GPCs, limiting therefore the facilitative impact of orthography in L2 word learning. The main objective of the present study was to further examine the effect of written word form on L2 spoken word recognition in a children population. To this aim, we taught 35 French fifth graders 20 German words. They could hear all the German words and see a picture representing these words. Half of these words were accompanied by their written form. For the other half, a string of symbols replaced the written form. Then they were tested in an Auditory Lexical Decision Task. Results showed that the presence of an Orthographic cue during the learning phase influences the Accuracy but not the Reaction times. These results show that the acquisition of a phonological representation of a L2 word is facilitated by orthography, which plays a stronger role than that of a purely visual cue. Therefore, shared L1 and L2 GPCs played a stronger role in word memorization while L1 and L2 GPC competition had only weak effects.

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Keywords: L2 vocabulary acquisition, orthographic information, grapheme to phoneme correspondances, children
Lexical acquisition in French-Portuguese toddlers: Exploring the relationship between vocabulary size and executive function abilities

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We observed early lexical development in bilingual toddlers to explore the relationship between vocabulary size and executive function abilities. Twenty-two bilingual toddlers speaking European Portuguese (EP) and French, living in France and in Switzerland were included in a cross-sectional study: eleven were 16 months old, eight were 24 months old and three were 30 months old. Their language development was assessed with the French and Portuguese Communicative Development Inventory (adaptations of MacArthur-Bates CDI [Fenson et al., 2007]). Parental questionnaires were also used to assess language dominance (PaBiQ [Tuller, 2015]), developmental stages (ASQ-3™; Squires et al., 2009) and executive functions (BRIEF-P; Gioia, Aspy, & Isquith, 2003). We calculated the number of words acquired in each language (EP and French), the number of words for both languages (Total Vocabulary: TV=EP+French) and the number of acquired concepts (CV). For EP, the results show that almost all participants have the same performance in vocabulary acquisition as their monolingual EP pairs ($\chi^2(1) = .73, p = .39$). The French vocabulary size of these bilingual children is below the monolingual French norms ($\chi^2(1) = 6.55, p = .01$). However, their TV (EP+French) and CV exceed the vocabulary of monolinguals for both languages (all $ps < .03$). There is no correlation between TV and BRIEF-P Working Memory scale ($r_s = -.19, p = .51$), neither between TV and BRIEF-P Inhibition scale ($r_s = -.29, p = .31$). Raising a child in a bilingual environment has no negative impact on vocabulary acquisition neither on cognitive abilities.

Keywords: lexical acquisition, vocabulary size, simultaneous bilingualism, executive functions
Is bilingual morphological processing modulated by individual differences? Evidence from a masked priming lexical decision task with French-English bilinguals

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Several studies have provided evidence for an early and automatic morphological decomposition during visual word recognition in native languages. However, evidence for non-native languages is scarce and controversial. While some studies observe similar morphological priming effects in the processing of transparent (fighter-FIGHT) and opaque (wallet-WALL) pairs, and null effects in the processing of orthographic control pairs (need-NEEDLE) both in native and non-native languages; others only found evidence for morphological processing in the native language. These inconsistencies may be due to variables such as the cognateness (Comesaña et al., 2018) as well as to different linguistic profiles of participants (semantic vs. orthographic linguistic profiles, Andrews & Lo, 2013). Taking this into account, the main aim of the present study was to examine the role of individual differences in the processing of non-cognate derived words (fighter-combattant, in English and French, respectively). To that purpose, intermediate unbalanced French-English bilinguals and English monolingual controls carried out a masked priming lexical decision task in English. To determine participants’ linguistic profile, the size of L2 vocabulary and spelling fluency was evaluated by the Nelson-Denny Reading Test (Brown, Fishco, & Hanna, 1993) and by the Wechsler Individual Achievement Test (2nd UK Edition; Wechsler, 2005) respectively. Results will be discussed in light of current models of bilingual and monolingual morphological processing.

Keywords: morphological priming, French-English bilinguals, derived words, spelling skills, vocabulary skills
Spanish-English bilinguals are moderately likely to code-switch in the progressive structure between the Spanish auxiliary "estar" ("to be") and the participle (e.g., "Las personas están protesting"). However, a switch at the perfect structure between "haber" ("to have") and the participle ("Las personas han protested") is rarely produced. This is called "auxiliary phrase asymmetry" (e.g., Tamargo et al., 2016; Poplack, 1980). One hypothesis ("grammaticalization") is that "estar" has more semantic weight as it also functions as a verb (e.g., "La persona está popular"), whereas "haber" is almost exclusively used as an auxiliary. To test this, we employed the bilingual Dual-path, a connectionist model of bilingual sentence production (Tsoukala et al., 2017) that produces spontaneous code-switches. We trained it using progressive, perfect, and simple structures in Spanish and English, including phrases such as "the boy is happy; el niño está feliz" and "the boy has a dog; el niño tiene un perro". We tested the simulation on 500 progressive sentences ("the boy is cleaning") and 500 that were the perfect equivalent ("the boy has cleaned"). The simulation showed a strong preference for progressive participle switches. To further investigate the grammaticalization hypothesis, we trained another simulation using the same input, but replacing "haber" with "tener" (the Spanish verb "to have"), thereby adding semantic weight to the perfect auxiliary; "han protested" became "tenían protested". When tested on the same sentences, the second simulation didn't show a preference. This confirms the possibility that the grammaticalization account is responsible for the asymmetry.

Keywords: auxiliary phrase asymmetry, code-switching, computational cognitive modeling, sentence production, bilingual dual-path
Cerebellar involvement in the control of verbal interference: A study of bilingual and monolingual adults

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We have reported cerebellar involvement in control of verbal interference: specifically, the paravermis, showed higher grey matter density and activation in individuals who were better at controlling verbal interference in a sentence interpretation task (Filippi et al., 2011). The current study extends the investigation to compare brain structure sensitivity to verbal interference control across two groups, English monolingual (N = 41) and multilingual (N = 46) adults. Using voxel-based morphometry (VBM), our goal was to identify i. systematic structural volume differences and ii. differences in regional patterns of grey matter sensitivity to performance on the sentence interpretation task, controlling for group variability in age, nonverbal reasoning and vocabulary knowledge. We found no evidence for a between group performance advantage and the only structural difference was enhanced grey matter volume in lateral temporal cortex (BA21) in bilinguals, an area associated with auditory language processing. However, we found a significant group effect in grey matter sensitivity to task performance: stronger sensitivity in the paravermis in bilinguals compared to monolinguals in accuracy performance in the high (relative to low) verbal interference condition. We also observed more sensitivity in bilinguals within medial prefrontal cortex and dorsal anterior cingulate cortex in this condition, areas associated with attentional control and resolution of conflict from distracting stimuli (e.g., Burgess et al., 2007; Weissman et al., 2005). Our findings suggest that multilanguage acquisition mediates regional involvement within the language network, conferring enhanced functional plasticity within structures (including the paravermis) in the service of optimal control of linguistic interference.

Keywords: bilingualism, verbal interference, MRI, VBM, cerebellum
Two elicited production studies on the scope ambiguity involving negation and \textit{porque} ('because')-adverbials in Spanish are reported in this paper.

An important contribution of prosody has been suggested for the processing of the English \textit{not-because} ambiguity (e.g. \textit{Jane didn't purchase the white blouse because it was silk}). Koizumi's series of experiments (2009, 2010) suggested that the presence or absence of a prosodic boundary before \textit{because} is responsible for the usual dispreference for the low/VP attachment of \textit{because} (NOT>BEC) over the high/IP attachment (BEC>NOT). The present project extends this finding to Spanish and adds cross-linguistic insights.

The intuition in Spanish is that the choice of verb mood in the \textit{porque}-clause might disambiguate the construction. On the high/IP attachment reading (PORQ>NO), the verb is in the indicative (e.g. \textit{Julia no se compró la blusa blanca porque es de seda}), and on the low/VP attachment (NO>PORQ), the verb is in the subjunctive (e.g. \textit{Julia no se compró la blusa blanca porque fuera de seda}).

In a written sentence-completion task, an overwhelmingly high proportion of PORQ>NO productions (99\% of 828) were found, as expected. However, the few NO>PORQ productions always involved subjunctive verb use. An analysis of data from an elicited auditory production task (by 6 speakers) further indicates that there is indeed a prosodic distinction between the two readings, as in English.

These findings confirm the native speaker intuition and have set the scene for further investigation on the interplay between strictly structural, prosodic, and morphosyntactic factors in the ambiguity resolution across languages.

\textit{Keywords:} scope ambiguity processing, elicited production, negation, Spanish
Predictive generation of syntax during sentence reading

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Within predictive accounts of sentence processing, it has been hypothesized that syntactic prediction occurs only for arguments (subjects and objects) but not adjuncts (adverbs). Here, using eye tracking during sentence reading in Spanish, we test this hypothesis through the combined manipulation of two factors (syntactic context and parafoveal processing) independently related to such a predictive generation of syntax. Taking advantage of pre-verbal Spanish clitics, we induce the prediction for a post-verbal object needed in certain syntactic contexts (predictive: “María le envió…”) or block it as it is not required in others (nonpredictive: “María lo envió…”). Moreover, we manipulate parafoveal syntactic information during verb reading by placing different noun phrases afterwards: either objects (“el libro”) or adverbs that visually resemble objects (“el lunes”). Thus, in this 2 x 2 factorial design, only one condition is ungrammatical (nonpredictive context-object: “#María lo envió el libro…”). Indexing the predictive generation for an object, we expect a main effect of syntactic context on the verb (longer reading times for predictive than nonpredictive contexts) and the post-verbal noun phrase (higher skipping rates for the former contexts). Moreover, if syntactic parafoveal processing during verb reading modulates the effects of syntactic context, such reading measures would vary depending on the noun phrase. According to the hypothesis tested here, the ungrammatical condition should result in the longest reading times and lowest skipping rates, and the most expected configuration (predictive context-object) should show the opposite effect. Overall, the results of this experiment will clarify how syntactic information is predictively generated.

Keywords: syntax, prediction, eye tracking, reading, parafovea
A strong hypothesis in Psycholinguistics posits shared mechanisms for comprehension and production (Pickering & Garrod, 2007; Momma & Phillips, 2018). Two sentence completion studies eliciting Relative Clauses (RCs) show how prior predictions, built while reading, modulate generation of finit grammatical details of continuations in ways comparable to comprehension.

Avoidance of Relative-Clause (RCs) is well-documented in parsing (Staub et al. 2018). Grillo & Costa (2014) illustrate this in ambiguous contexts which license a Pseudo-Relative (PR) reading (e.g. under perceptual, but not stative predicates): PR-compatibility leads to higher acceptability and shorter fixations (Grillo et al. 2015). Shared mechanism approaches would predict a similar preference to be observable in production.

Participants (Spanish, N=40, English N=40) completed snippets containing a perceptual or stative verb+object+complementizer (e.g. Ian saw/knew the dentist that...). Complementizers introduce exclusively RCs in both conditions in English, and in statives in Spanish. Perceptuals license both PRs and RCs in Spanish.

Contrary to RCs, PR-availability is heavily restricted: PRs require eventive predicates, matrix/embedded tense-match, imperfectivity, subject-gap. Preference for PR-generation predicts continuations to show higher coherence in these properties under perceptual in Spanish. Using these factors as criteria to evaluate continuations, we found an interaction ($p<.001$) explained by no difference between languages in the condition with statives (7% Spanish versus 6% English, $p>.05$), but a clear polarization with perceptuals in Spanish (50% Spanish versus 17% English, $p<.001$) where half of the continuations obey criteria for PR-compatibility. The results support shared representations and mechanisms between production and comprehension.

Keywords: syntactic processing, syntactic production, parsing preferences, shared mechanism, predictions
Cyclicity in parsing and interpretation decision-making in Russian and English

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Structural processing goes through several cycles and parsing decisions made at higher cycles shape further sentence interpretations. In Russian and English, the difference in RC attachment resolution yields different binding domains for anaphora resolution.

(1) Bill saw [(Rus-like the mother) 2 of [(Eng-like the woman) 1]] [HA [LA that was talking about herself 1, 2 / her 2, 1 in the yard]].

In a self-paced reading experiment (Linger) with monolingual speakers, the Russian-like binding pattern for (1) is “herself = mother, her = woman”, while it is the opposite in English, p < .001. An overall switch to the Russian-like pattern is caused by the effect of the matrix perception verb, p < .05. The perception verb forces the appearance of an eventive complement that modifies the matrix verb, as in (2)

(2) Bill saw [SC the mother of the woman’s talking about herself / her in the yard].

The eventive interpretation competes with the RC-readings and causes a processing conflict. Its resolution increases the reading time at the critical regions, p < .001. At the level of interpretation, binding principle A is found to be easier to process. Sentences with reflexives are read faster at the spill-over region and binding decision for reflexives are made faster than for pronouns, p < .001. Different interpretation patterns in English and Russian result from the application of similar parsing mechanisms. We discuss these findings in the spirit of Grillo and Costa’s (2014), Grillo et al’s (2015) analysis.

Keywords: parsing cycles, prediction-based, phrase structure rules
Eye-tracking the use of control information in null subject-antecedent dependencies

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We present two eye-tracking experiments aimed at studying the decision principles that guide the resolution of anaphoric dependencies in complement control constructions. These dependencies, illustrated in (1), involve interpreting a relation between the null subject of the infinitive (also known as PRO) and its controller: the subject or the object of the matrix clause, depending on the control properties of the verb used. The aim of this project is twofold: first, we are interested in how control information is used to recover the appropriate antecedent. Second, we want to examine whether the parser considers structurally irrelevant but feature-matching antecedents during dependency resolution (=illusions of grammaticality, Phillips et al. 2011). Previous studies show conflicting results with regard to the use of control information (e.g. Nicol et al. 1989; Betancort et al. 2006) and interference in anaphoric dependencies (e.g. Dillon et al. 2013; Parker et al. 2015).

(1) Juan le prometió/aconsejó a María [PRO ser más cuidadoso/a con los libros].

The experimental conditions for experiment 1 (n=47) were created by crossing three factors: CONTROL (main clause verb), GRAMMATICALITY (adjective gender) and DISTRACTOR (non-controlling noun gender). Experiment 2 (n=44) replicates and simplifies experiment 1 in that only CONTROL and GRAMMATICALITY are manipulated. Putting the results of the two experiments together, they seem to indicate that subject and object control dependencies engage in different processing routines and are differentially affected by grammatical violations and interference processes. These results will be discussed against current theories on the processing of long distance dependencies and linguistic theories of control.

Keywords: control predicates, anaphora, agreement, grammatical illusions, long distance dependencies

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Interrogative extraction from nominal copular sentences: A structural asymmetry account

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Nominal copular sentences [DP V DP] can be distinguished in: canonical (1) subject + copula + predicative expression and inverse predicative expression-copula-subject (2) (Moro 1997).

(1) [SubjDP The picture]_i is [SmallClause_t [DP the cause of the riot]].
(2) [PredDP The cause of the riot]_j is [SmallClause_ [SubjDP the picture]_t_t]

Different syntactic asymmetries are found between inverse and canonical copular constructions (Moro 1997). This study is about a SPR experiment combined with a sentence comprehension task (40 native Italian participants) on the asymmetry found in the wh- extraction of the NP from the referential subject DP (foto 3a-4a) or from the predicative DP (causa 3b-4b) in both canonical (3) and inverse copular sentences (4).

(3) Canonical
a. *[pp Di quale muro]_i, …[DP le foto_t_a sono[SC[t_a][la causa[pp della rivolta]]]]?
   Of which wall … the pictures are the cause of the riot?
b. [Di quale rivolta], …[DP le foto[pp del muro]]_a sono [SC[t_a][la causa _t]]?
   Of which riot … the pictures of the wall are the cause?

(4) Inverse
c. *[Di quale muro]_k,… [la causa[pp della rivolta]]_a sono[SC[le foto_t_k][t_b]]?
   Of which wall the cause of the riot are (=is) the pictures?
d. *[Di quale rivolta]_l,… [la causa _t_k]_b sono[SC[dp le foto [pp del muro]][t_b]]?
   Of which riot … the cause are (=is) the pictures of the wall?

The results show that participants were both quicker and more accurate in answering the comprehension question when the extraction takes place from a predicative DP in canonical sentences (3a), confirming that the structural asymmetry between referential subject and predicative DP has a central role in both the processing and the comprehension of nominal copular sentence as predicted by Moro(1997,2006).

Keywords: syntactic processing, copular sentences, WH extraction, clause structure
Sentence processing in older adults with and without subjective cognitive decline: Influences of working memory and interference control

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Age-related declines in Working Memory (WM) and executive functions have been related to language processing difficulties with advanced age. Moreover, older adults with Subjective Cognitive Decline (SCD) show increased subclinical cognitive difficulties, and might have an increased dementia risk, without detectable impairment by standardized neuropsychological tests. Language processing skills have been scarcely studied in SCD. Here we aimed to better understand how WM and Interference Control (IC) modulate sentence processing skills across older adults with and without SCD. Sixty-nine young adults and 94 older adults with (N = 35) and without (N = 59) SCD were tested in an on-line self-paced reading task. The task included sentences with embedded relative clauses taxing executive control and WM. Participants also performed standard WM and IC tasks.

Reading times at critical sentence points were analyzed using linear mixed-effect models to look for interactions among sentence complexity, group and cognitive skills. Crucially, IC influenced reading times in older adults at critical points of increased complexity in relative clauses. Performance in an end-of-sentence verification probe task was similar across groups and mainly dependent on WM capacity. Difficulties related to SCD were subtle, and were noted in a lower modulatory effect of WM at the onset of complex relative clauses, and slower response times to end-of-sentence verification probes.

The current data suggest a modulatory role of Interference Control for sentence processing in older adults. Older adults with SCD seem to show only some subtle compensatory effects to maintain an adequate comprehension performance.

Keywords: older adults, working memory, interference control, self-paced-reading, sentence processing
[P11-15] Event-related and time-frequency responses to the implicit processing of syntactic structure and semantic context

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Studies on the brain bases of linguistic processing have focused in responses to semantic and syntactic anomalies. Notwithstanding, it is not yet clear how anomaly detection engage language processes along with attention and error correction mechanisms. Here we follow an alternative approach studying the implicit processing of sequences of visual stimuli, which might or might not form sequences of semantically and syntactically related words. Seventeen volunteers underwent a Magnetoencephalography (MEG) scan and were asked to respond to oddball red-coloured stimulus (discarded from analyses) embedded in a stream of white-coloured words and consonant strings, with no additional task imposed. We manipulated orthogonally syntactic structure (by including syntactically well-formed sentences or word sequences with function words substituted by consonant strings) and lexico-semantic context (by including semantically related or unrelated content words).

Results showed effects of syntactic structure on event-related and on time-frequency MEG responses. In contrast, there was no effect of lexico-semantic relatedness. This is in agreement with previous results showing that, even if effects of lexical-semantic context on brain activity might occur rather automatically, they can be reduced if attention is directed away from the semantic contain of stimulus. Source analysis showed an increased recruitment of left temporo-parietal brain areas for syntactically correct sentences, with increased high beta (20-30Hz) oscillatory responses at the later portion of the sentence. These results might reveal brain mechanisms for the integration of syntactic information in sentence processing, independently of semantic relatedness.

Keywords: syntax, brain activity, magnetoencephalography, time-frequency
To be (homonymous) or not to be: That is the question. A synchronic approach to homonymy

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Homonymy is a type of lexical ambiguity, produced when two words with different etymological origins happen to converge in a single form. From a synchronic point of view, an ambiguous word is homonymous when speakers find no relation between its meanings. In the last decades, the question of how these words are processed and stored has been one of the main focus of some psycholinguistic research. The data from these investigations, nevertheless, are mostly based on English stimuli and do not always take into account the distinction between homonymy and polysemy, considering ambiguity as a homogeneous phenomenon.

The current work contributes new data on how speaker interpret, process and store homonymous words, based on Spanish stimuli, classified from a subjective point of view. Two experiments were carried out: the first one was a lexical decision task in which stimuli were isolated; the second one was a reading task with an eye-tracker in which homonymous words were presented in a context.

The results show (as precedent studies based on English stimuli) a considerable disadvantage of isolate homonymous words. Nevertheless, the reading task offers interesting results: an advantage in the processing of homonymous words in context, by means of a positive processing effect related to priming. Furthermore, the eye movements seem to indicate that there is a correlation between the fixations and the meaning selection. These empirical data support a storage model in which the meanings of homonymous words are represented in different entries of the mental lexicon.

Keywords: homonymy, ambiguity, synchrony, lexical access, semantic access

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Phonological competition during spoken-word recognition

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An ongoing debate concerns whether spoken-word recognition happens in an incremental or continuous manner (Marslen-Wilson & Zwitserlood, 1989; McClelland & Elman, 1986). The aim of this study was to investigate which strategy adults use based on the amount of time they are given to pre-view visual objects before hearing a spoken word. In Experiment 1, participants were presented with two images for one second before they heard a target word allowing them to implicitly name the images before hearing the auditory input. Among the images was either an object that rhymed with the spoken word or an object that shared its onset; paired with a phonologically unrelated object. Eye-tracking data revealed that adults preferentially fixated onset competitors over unrelated objects soon after word onset and fixated rhyme competitors shortly after. The design and stimuli of the second experiment were identical to Experiment 1, however, visual stimuli were now presented immediately at the offset of the spoken target word, preventing participants from implicitly naming the images before hearing the entire spoken word. Results revealed that there was still a, reduced, rhyme effect observable when allowing no preview of the images. However, the overall onset effect vanished under these conditions. The findings suggest that when given time to implicitly name images, listeners might be using a more incremental strategy of processing the auditory input whereas without any prior information on the visual display, they may be using a more global continuous mapping strategy.

Keywords: eye-tracking, phonology, spoken-word recognition, visual world paradigm
In word formation, the term compositionality refers to the extent to which the meaning of an expression can be derived from the meaning of its constituent parts plus the way they are combined. Speaker-writers might be unaware of the fact that the meaning of a compositional word derives from its component parts and, therefore, they might not perceive all the morphologically complex words as such. Furthermore, parsing some words might be particularly problematic because of lexicalisation. Our goal was to identify the usage characteristics and morphological features that best explain Catalan speaker-writers’ awareness of adjective compositionality. We hypothesized that morphological types of words are not going to be perceived dichotomously – as simple or complex – but rather there would be a decomposability continuum, from less decomposable to highly decomposable words. To contrast this hypothesis we carried out a two phased study, the first phase was devoted to assessing informants’ decomposability judgments for a number of adjectives and the second was aimed at determining which of a set of selected adjectives’ features predict these judgments. Results confirm that there is a continuum in Catalan speaker-writers’ awareness of compositionality. Informants do not oppose between unparsable and parsable items, rather they establish a gradient of decomposability. The strongest predictor is adjective length, however. The predictive power of the regression model increases when adjective length is combined with family size of the suffix and stem complexity. Morphological complexity appears as a linguistic construct that affects usage but is not accessed explicitly.

Keywords: adjective, Catalan, compositionality, decomposability continuum, morphological decomposition
[PII-19] Synchronous gesture-speech alignments in narrations by children with specific language impairment

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Children with Specific language impairment (SLI) produce a greater proportion of representational gestures in narrative tasks, possibly reflecting a word retrieval compensatory strategy. However, little is known about whether SLI produced gestures synchronous with speech similarly to typically developing (TD) peers, and importantly whether speech fluency play a role on synchronous gesture-speech productions. Our study aims to identify these patterns of synchronicity in SLI children during dysfluent and fluent speech.

Gesture and speech productions by ten 8-year-old children with SLI and ten age-matched TD peers in a narration task were analysed. These were analyzed by fine temporal and semantic gesture-speech alignments. The results showed that children with SLI used more gestures overlapping with speech dysfluencies that TD peers during dysfluent speech. These results are related to previous studies reporting that SLI children frequently use gestures as a formulation strategy to compensate for language deficits.

Keywords: SLI, gesture, fluency, speech, language
Speech and hearing disorders in children with different localization of brain tumors

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In the modern world cancer are one of the leading causes of mortality for children and adolescents. Cancer is diagnose annually in about 300 thousand children aged from birth to 19 years (Stelianova-Foucher et al., 2017). A number of diseases and dysfunctions are develop because of oncology. In particular, problems with the perception and reproduction of speech are develop.

In this regard, the purpose of this work is to assess the level of hearing and the clinical assessment of the development of basic linguistic competencies in children suffered cancer with different localization of brain tumors.

The study involved 20 patients aged from 7 to 17 years with different localization of brain tumors in remission. The patients received chemotherapy as treatment. The method of audiometry was applied to assess the level of hearing (Kalyanam et al., 2018). The level of hearing loss was calculated as the arithmetic average at 4 main frequencies (most important for speech perception): 500 Hz, 1000 Hz, 2000 Hz and 4000 Hz. To assess the level of speech impairment the Russian Aphasiological Test “Korablik” was conducted. It allow estimating the degree and nature of speech disorders in children (Ivanova et al., 2016).

As a result of a preliminarily series of experiments it was found that these patients have a decrease in the level of hearing as well as impaired perception and speech reproduction at different levels. A further research would allow us to develop a methodology for the rehabilitation of speech skills.

Keywords: Language disorders, pediatric oncology, speech rehabilitation
Early reading problems are observed in Alzheimer's disease and worsen as the disease progresses. This deterioration may be due to damage to one or both of the two reading pathways (lexical or phonological). The aim of this work is to verify which of the two routes is most compromised in these patients, by analysing the errors they make during reading aloud.

The study was carried out with a group of healthy elderly people and another group of patients with Alzheimer’s dementia. All of them carried out a task of reading aloud pseudo-words similar to real words, to which the stress was manipulated, so that it was congruent or incongruent with the stress of the real word (ex: tiburón: niburón (congruent) – niburon(incongruent)).

The results show that the control group tends to read pseudo-words as whether stressed in the penultimate syllable, while in the group of Alzheimer's patients there is a greater number of lexicalizations, which could indicate a greater damage in the phonological route with respect to the lexical one.

Keywords: Alzheimer's dementia, lexical route, phonological route, pseudowords, stress
Listening to and singing songs facilitate initial stages of L2 pronunciation

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While previous studies point to the beneficial effects of musical expertise and aptitude on L2 processing (e.g., Christiner & Reiterer, 2013), and songs may help L2 vocabulary learning (e.g., Ludke, Ferreira, & Overy, 2014), less is known about the benefits of song-based training for L2 pronunciation.

The present study explores the effect of (a) listening to songs vs. rhythmic speech (Exp 1), and (b) singing vs. listening to songs (Exp 2) on L2 pronunciation and vocabulary learning. Following a between-subject pre- and posttest design, 118 Mandarin Chinese students (Mage = 17.5) without knowledge of French learned the lyrics of a meaningful French song, repeated three times, during a 4-min training. Participants’ productions of 12 target words were gathered before and after the training and evaluated perceptively by two French native speakers on an accentedness scale from 1 to 7. At posttest, they undertook two vocabulary tasks.

Results revealed that (a) the listening-to-songs group reduced their accentedness significantly more than the rhythmic-speech group (κ = .715, F(1,99) = 6.450, p = .011); and (b) the singing group outperformed significantly the listening-to-song group (κ = .669, F(1,115) = 7.457, p = .006). However, no beneficial effect of vocabulary learning was found. The results have implications for the adequacy of melodic trainings in pronunciation instruction at least at beginner-level. A follow-up classroom study will explore the potential benefits of melodic training on L2 pronunciation and vocabulary learning with an one-month singing training for intermediate Chinese EFL learners.

Keywords: L2 pronunciation, melodic training, music and language, singing songs, speech
The role of lexical iconicity in situated and displaced word-learning

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A key concern for language development research is how children learn to map novel words onto referents when faced with a large number of possible referents. Previous research has shown that children are able to learn novel referents both in contexts where label and referent co-occur, and in contexts where label and referent are temporally or spatially displaced. However, the mechanisms by which children make these inferences are not clear. We propose that iconicity may help children to link labels to referents across these two contexts, by providing a grounded, real-world link between label and referent. However, previous work on iconicity in word learning has focussed solely on situated contexts; the role that iconicity might play in displaced contexts is, as yet, unexplored.

We present a study examining the effect that iconicity has on verb learning in both situated and displaced contexts. Thirty-seven two-year-olds were trained on novel labels for video events, and then tested in a forced choice task to find the referent for a given label. Labels could be either iconic or arbitrary, with respect to the sound of the event, and were presented concurrently with the video (situated), or after the video had played (displaced).

Children showed better accuracy at identifying referents with iconic labels over arbitrary ones, and performed particularly poorly with arbitrary labels in the displaced condition. These results suggest an advantage for iconicity in early word learning, particularly in displaced contexts, and present the first work on iconicity across situational contexts in word learning.

Keywords: language development, iconicity, displacement, word learning
Complex phonological tasks predict reading fluency and reading comprehension

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Reading is a complex multifaceted process that critically relies on phonological processing (Del Campo et al., 2015, Ramus et al., 2013). The well-known theoretical model of phonological processing developed by Wagner and colleagues (Wagner et al., 1994) separates phonological skills into three main components: phonological awareness, phonological working memory, and rapid naming – and this model became the basis for modern studies of the relationship between phonology and reading (Del Campo et al., 2015; Kalashnikova & Burnham, 2016). But the role of the complexity level in phonological processing is underexplored now.

We examined the relations between the level of complexity in phonological processing tasks and reading outcome, including reading fluency and reading comprehension. The research was conducted in a group of typically developing Russian-speaking children of primary school (N=90, 7-to-11 years of age, 48=girls, 42=boys). We used linguistically based approach and designed phonological subtests taking into account a number of psycholinguistic parameters, i.e., age of acquisition of words, word length, syllabic structure, frequency of use, articulatory features. The theoretical assessment of the complexity level in seven phonological subtests was verified by the empirical evidence. Our analysis showed that the most difficult phonological tasks have significant independent contribution to text reading and reading comprehension. The effect was revealed in a group of children controlled for non-verbal intelligence. These results suggest that phonological processing needs to be considered in models of reading not only in terms of traditional types, but also regarding the quantity and types of involved cognitive sub-processes.

Keywords: phonological processing, reading, complexity level
[PII-25] Children’s use of tactile input when acquiring non-native phonological contrasts

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Previous research shows that infants and children (as well as adults) benefit from audio-visual stimuli when acquiring non-native phonological categories. Yet research on the multimodal nature of language learning has disregarded one type of potential relevant information: tactile input. The present study aims at exploring if tactile lip-reading is also a relevant source of phonological information that can contribute significantly to children’s acquisition of L2 contrasts. A total of 66 L1 Catalan/Spanish 5-year-old children are currently being pre-tested on their perception (AX task) and production (imitation) abilities with respect of the /æ-ʌ/ vowel contrast (eg. ‘cat’ - ‘cut’), which is non-existing in their L1. Children will then receive 3 training sessions in 3 distinct conditions (between-subjects): Audio-Only (repeating English native speaker’s production of the target items), Audio-Visual (repeating these target items while looking at themselves in a mirror), or Audio-Visual-Tactile (repeating target items while looking at themselves in a mirror and touching their own lip movements with their fingers). Finally, their perceptive and productive abilities will be evaluated again as in a post-test. Pre-test and post-test phases consist of 24 monosyllabic non-words that are also part of the training sessions, plus 12 monosyllabic untrained non-words and 12 monosyllabic untrained real words to evaluate their generalization abilities. Results will reveal if speech information that is perceived through the tactile sense can help child learners to acquire L2 phonological contrasts and, more generally, if the cross-modal nature of speech information can also be extended to the tactile sense.

Keywords: non-native phonology, tactile input, children, multimodal communication, child second language acquisition
Phonological iconicity is the resemblance between the form of the words and their meaning. In this study, we investigated whether the mapping between phonology and affective content facilitates the acquisition of novel words (i.e., pseudowords). With this aim, we generated a set of valenced (positive and negative) pseudowords. To do that, we first computed the valence of each Spanish phoneme. This was done by calculating the average valence (obtained from published databases) of all the words in which a phoneme appears. Once this value was obtained, we created pseudowords formed by negatively valenced phonemes and pseudowords formed by positively valenced phonemes. During the acquisition phase of the experiment, participants were presented with pairs consisting of a Spanish word and a pseudoword. Such pairs could be affectively congruent (i.e., both the word and the pseudoword had the same type of affective valence, either positive or negative) or incongruent. In the test phase, participants produced the Spanish words associated to the pseudowords. The results failed to show a significant congruence effect, suggesting that phonological iconicity did not facilitate the acquisition of novel valenced words. However, we observed that participants were more accurate in producing the Spanish words associated to positive pseudowords than to negative ones, regardless their pairing (i.e., with positive or negative words). This facilitation might be given by the positive features of the sound in novel words, which goes in line with the notion that positive words in a language tend to be learned earlier in childhood than negative words.

Keywords: sound symbolism, iconicity, affective content
The study of connotations in lexical innovations

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The aim of this proposal is to study connotations in a set of lexical innovations (i.e. neologisms). In order to do that, we have carried out a survey to analyze the speakers’ perception. Although in the first place we considered Osgood's differential semantics (1957), we have finally decided to use opposite categories related to the three different types of connotations: stylistic (stylistic and usage variation), subjective (affective, subjective or individual nature) and ideological (cultural or ideological content) (Espiño, 1985). Then, considering this information, we isolated four categories with two opposing items per pair:

1. informal / formal (regarding the register)
2. personal / general (regarding the nature)
3. value judgment ‘valoratiú’ / objective (regarding the opinion)
4. ideological / neuter (regarding the load)

A total of 83 participants answered the survey. If we focus on the materials, we used 20 neologisms in Catalan, obtained from the Observatori de Neologia (UPF) with their context of use. The survey was done online using Google Forms. As for the procedure, for each neologism the participant had to use a Likert scale of 5 points to evaluate the two items for each pair of the four categories. We also collected sociolinguistic information about the participants. We believe that, when this task is carried out, the speaker takes into account different linguistic characteristics of the word, such as morphological, semantic, pragmatic and discursive features. For this reason, we are going to correlate the results of the survey and the analysis of their linguistic characteristics.

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Keywords: lexical innovations, neologisms, connotations, perception, word-formation
The capability of word frequency and accessibility indexes derived from large-scale free-association Spanish norms to predict lexical processing

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We present the results of large-scale study on the associative structure of words in Spanish, derived from free-association data collected from a large sample of young adults doing a discrete association task. Free association norms are available for a set of 6739 highly interconnected cue words, with empirically-derived estimations of density and strength of connections between words, and global indexes of accessibility and frequency of production. Recent studies have found that global frequency of a response in English large-scale free association data can be taken as an index of its lexical centrality, and it could determine the efficiency to retrieve lexical information. To replicate this result with Spanish data, a correlational study was conducted to test the capability of free-association derived indexes (frequency and accessibility) to predict lexical decision times (as available in SPALEX and in González-Nosti, Barbon, Rodríguez-Ferreiro & Cuetos, 2014) in comparison to more traditional frequency indexes. Results showed higher correlations for the free-association derived indexes than for subtitle, oral and written based frequency indexes. This suggest that frequency and accessibility estimations derived from discrete free association tasks could be considered as valid and useful indexes of lexical processing.

Keywords: word frequency, word accessibility, association norms, lexical processing

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Linguistic knowledge mediates the effects of working memory on written second language production

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Theoretical accounts of written language production (Kellogg, 1996) have overwhelmingly implicated working memory (WM) as the key cognitive resource. However, this assumption is not well supported by empirical evidence from studies with bilingual and second language (L2) writers (Baddeley, 2015; Juffs & Harrington, 2011). At the same time, investigations on L2 grammar processing (Dussias & Pinar, 2010) or reading comprehension (Jon & Plakans, 2017) have shown the WM effects may depend on L2 proficiency. These findings are suggestive enough to hypothesize that the role of WM in L2 writing may also be mediated by the level of L2 linguistic knowledge. To test this hypothesis, we performed a study in which fifty-five Spanish learners of L2 English completed a standardized L2 proficiency test (Oxford Placement test), a complex verbal WM test and an L2 writing task. Quality of written performance was assessed in terms of fluency, accuracy, and lexical, syntactic and semantic complexity. The analysis showed that WM effects (i) were mediated by L2 proficiency, and (ii) depended upon the dimension (i.e., accuracy, complexity, fluency) of written production. Thus, for low proficient learners, facilitative effects of WM were found in the area of grammatical accuracy. However, for high proficiency writers, there was a positive relationship between WM and lexical sophistication. We interpret these findings in light of the developmental theories of L2 learning (Marsden et al., 2013) and in light of cognitive psychology models that emphasize the interaction between knowledge and WM as the main determinant of performance quality (Hambrick & Engle, 2001).

 Keywords: working memory, linguistic knowledge, writing, second language
Two accounts of participle II (geschrieben—‘written’) exist in German linguistics. The traditional view describes it as an infinite verb form in all predicate positions. In alternative accounts, participle II undergoes a transformation from a verb into an adjective by a productive word-class changing process of conversion, if it follows the verb sein (‘be’), which is then interpreted as a copula. Traditional approaches describe the sein+PartII construction as resultative passive and interpret sein as auxiliary, same as werden (become) in regular passive constructions (werden+PartII).

Psycholinguistic evidence for the alternative view comes e.g. from a self-paced reading experiment by Stolterfoht et al. (2010): While they find no difference in reading times for genuine adjectives in either of the contexts (sein/werden), longer RTs were observed after the verb sein for the participle forms, which were interpreted as evidence for the costly conversion process.

In our grammaticality judgment and priming study, we found no evidence for the conversion process. Instead, our results support usage based processing accounts manifested in longer reaction times for dis-preferred/less frequent context, both for genuine adjectives (werden context dis-preferred) and participle II forms (sein context dis-preferred).

Our findings thus support the traditional analyses and shed doubts on the existence of a conversion process and on the idea that German participle II forms are assigned to different word classes depending on the syntactic context. Participants were native speakers (N=72) and advanced L2 German learners (N=60). Both groups showed the same pattern of results indicating that processing mechanisms were the same for both populations.

Keywords: German, participle II, conversion, word class
The influence of children’s divergent sociolinguistic experiences in the development of language as a social category: A systematic review

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Developmental research in social cognition has shown that language is a salient agent of social categorization in guiding children’s social interactions, both as a communication device (i.e. the use of generics in language boosts children’s essential beliefs about social categories; Rhodes et al. 2018) and as a marker of group membership (preferences for native-language and native-accented speakers emerge early in life; Kinzler et al. 2007). In a multilingual world, assessing the influence of children’s particular sociolinguistic experiences in the development of language-based social preferences is key to understand the cognitive role that language plays in social categorization processes. With that goal in mind, we conducted a systematic review of all the scientific literature that included language as a variable, whether it be participant sample or task design. Articles published between 1941 and 2018 including infants and children (10 years and under) were identified, sorted and analyzed. The final sample comprised 95 studies (8441 participants). The analysis examined the current divergent hypotheses for language-based social preferences (familiarity, innate social group bias, information driven) and, among others, detected three main factors that may be limiting the cross-cultural generalization of the findings: a) homogeneous sampling (68% of studies tested only monolingual children and English was the native language in 79% of the studies), b) lack of control of language exposure in the multilingual samples (only 10% used standardized language exposure tests) and c) scarcity of implicit preference measurements, which might be the hardest to track into adulthood (only 0.7% recorded implicit measures).

Keywords: sociolinguistics, social cognition, language-based social preferences, biases, multilingualism
[PII-32] Speech rhythm is modulated by human interaction: The case of synchrony in dyadic tasks

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We tested the effect of human live interaction on speech entrainment. Rhythm was operationalized in terms of beat (as the regularity in distribution of salient acoustic events in speech) and meter (as grouping of these events into patterns). To assess the impact of live interaction on speech entrainment, we separately recorded two participants while reading in synchrony during face-to-face interaction. Later, one of the participants read in synchrony with the recording from their partner during the live synchronous reading, and also read in synchrony with a solo-reading recording from same partner. Participants read a poetic text with clear meter, and a narrative text with no clear metrical structure. To assess entrainment and synchrony, we measured the degree of durational variability of speech intervals across conditions and texts, and the deviation in vowel onsets between partners. We found that people make their speech more regular to facilitate chorusing, and that inter-speaker synchronization was better in live interaction compared to the condition when the speaker needs to read in synchrony with a recording from synchronous reading, even though the degree of rhythmic regularity in the signal was the same in both. We also found that the text with meter modulated the achievement of synchronization only in the most challenging condition, and that it did not prove to be beneficial for the live interaction condition. These results show that live interaction plays a key role in inter-speaker entrainment, and that meter can provide additional benefits for chorusing in more challenging conditions.

Keywords: speech entrainment, speech rhythm, synchrony, synchronous speech

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Durational hand gestures facilitate the learning of L2 vowel length contrasts

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Previous studies have shown the benefits of observing or producing pitch gestures to acquire novel L2 tonal and intonational contrasts and the benefits of observing and producing beat rhythmic gestures for improving L2 pronunciation. By contrast, some studies have shown null effects for gestures representing vowel length contrasts in the perceptual discrimination of Japanese vowel length contrasts. Yet in practice, some teachers have suggested that visuospatial gestures representing duration help learning vowel length contrasts. The main goal of this study is to further investigate the role of durational gestures in the acquisition of L2 vowel length contrasts in Japanese by using a horizontal hand gestures.

In a pilot between-subject experiment with a pre- and post-test design, 30 adult Catalan dominant participants without Japanese knowledge were trained to discriminate the Japanese vowel length contrasts and to imitate Japanese sentences containing a set of words only contrasting in vowel length. They were randomly assigned to one of the two audio-visual conditions, namely (a) gesture group and (b) no-gesture group. Before and after training, all participants performed a discrimination task and an imitation task. The speech production of the participants was acoustically analysed for the duration of the target vowels.

The results reveal that although both groups improved in both tasks after training, the improvement of the gesture group was significantly larger than the no-gesture group. These pilot results suggest that a short training with durational hand gestures can facilitate the learning of Japanese vowel length contrasts in both speech perception and production.

Keywords: vowel length contrasts, durational gesture, speech perception, speech production, second language acquisition
[PII-34] Language partial left-lateralization speaks against modality-independence

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According to a widespread view, a core ingredient of language is an abstract, task-and-time-independent, amodal cognitive system located in the brain’s left perisylvian areas. Actually, the existence of both production and comprehension tasks, and sign and speech modalities is allegedly supporting it. Yet, complementing the one-system view (Lewis & Phillips, 2014) that presents language as a real-time computational system, and focusing on brain facts on language, we argue that the well-established dual stream model (Hickok & Poeppel, 2004 et seq.) fits better the view that language left-lateralization, which is restricted to the Dorsal Pathway (DP), is crucially contributing to the species’ vocal production learning abilities, which should be posited as basic for speech/language. Computational/syntactic abilities shown to rely on the inferior part of the DP should be interpreted as subserved by the uncontroversially sensorimotor function of the superior branch rather than witnessing the existence of an abstract and specific syntactic capacity (Friederici, 2011 et seq.). Functional considerations along with anatomic changes in development, evolution and non verbal autism, which will be discussed, lead to interpret the DP, as intrinsically related to the auditory-vocal integration necessary for speech production. Were an abstract, amodal and cognitive syntactic capacity to exist, it would better show up either as a separated structure or as associated to meaning and then, if the latter, in the bilateral ventral pathway, contrary to fact. Two prima facie problems for this view, sign and Wernicke’s aphasia, will be shown to be surmountable.

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Keywords: modality-dependence, left-lateralization, vocal production learning, dorsal pathway
Access to specialized knowledge: empirical studies to facilitate Specialized Translation and Terminology Management

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Terminology management is a challenge for professional translators, but it is important to facilitate their professional activity in an increasingly multilingual world. Frame-based terminology (FBM)(Faber 2012) is a guide to this goal, since it postulates an universal, language independent, prototypical event, with a series of common macrocategories (agent/patient, etc.) and their corresponding conceptual relationships. Given the human mind comprehends concepts by activating their associated conceptual relationships, testing this universal structure could be an important help for the Specialized Translation. With this aim, two groups (experts/non-experts in Oceanography) carried out two tasks: lexical decision (LD) and Word-association test (WAT), using terms (of more or less technical level) as stimuli. The experimental material was constructed on the basis of the conceptual structures identified in a previous corpus analysis. For the DL task, the degree of relationship between the prime and target stimuli (direct/indirect related, or not related) was manipulated. The results showed a facilitating effect in the related conditions. This effect was greater in the case of the experts answers to the terms of the higher technical level. In the WAT, a greater percentage of words associated and congruent with the prototypical event were observed in the case of the experts. Data from both studies are compatible with the specialized knowledge organization in the form of an event and macrocategories identified by the FBT. The results show the language independency of the specialized knowledge organization, that can be an appropriate guide for translation and accordingly supports the experimental psycholinguistic approach in Terminology.

Keywords: specialized knowledge structure, experimental Terminology, lexical decision, terminological stimuli, Specialized Translation

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