

AMLaP 2023

AMLaP 29 conference, Architectures and Mechanisms for Language Processing



August 31st – September 2nd, 2023

DONOSTIA-SAN SEBASTIAN

BASQUE COUNTRY, SPAIN

Organizer



Sponsors



PROGRAM SUMMARY

Thursday, August 31 st	Friday, September 1 st	Saturday, September 2 nd
<p>08:00 - 08:50 Registration & Welcome Coffee</p> <p>08:50 - 09:00 Opening</p> <p>09:00 - 10:00 Keynote: Vitória Piai</p> <p>10:00 - 10:40 Oral Session 1</p> <p>10:40 - 11:10 Coffee break</p> <p>11:10 - 12:30 Oral Session 2</p> <p>12:30 - 14:00 Lunch break (on your own)</p> <p>14:00 - 15:00 Oral Session 3</p> <p>15:00 - 16:30 Poster Session I & Coffee break</p> <p>16:30 - 17:30 Keynote: James Magnuson</p>	<p>09:00 - 10:00 Keynote: Esti Blanco-Elorrieta</p> <p>10:00 - 10:40 Symposium: The bilingual brain</p> <p>10:40 - 11:10 Coffee break</p> <p>11:10 - 12:30 Oral Session 4</p> <p>12:30 - 14:00 Lunch Break (on your own)</p> <p>14:00 - 15:00 Oral Session 5</p> <p>15:00 - 16:30 Poster Session II & Coffee break</p> <p>16:30 - 17:30 Oral Session 6</p> <p>.....</p> <p>.....</p> <p>**</p> <p>20:00 - BUS Venue- Cider House 20:30 – Conference Dinner 23:30 – BUS Cider House – Donostia-San Sebastian</p>	<p>09:00 - 10:00 Keynote: Victor Ferreira</p> <p>10:00 - 10:40 Oral Session 7</p> <p>10:40 - 11:10 Coffee break</p> <p>11:10 - 12:30 Oral Session 8</p> <p>12:30 - 14:00 Lunch break (on your own)</p> <p>14:00 - 15:30 Poster Session III & Coffee break</p> <p>15:30 – 16:30 Oral Session 9</p>

** For Conference Dinner Registrées ONLY

WELCOME

Welcome to the 29th Architectures and Mechanisms for Language Processing Conference!

We are happy that you are attending the 29th AMLaP Conference in the beautiful city of Donostia-San Sebastián.

AMLaP has established itself as the premier annual European venue for international interdisciplinary research on how people process language. This conference brings together psychological, computational, and theoretical perspectives on the cognitive mechanisms underlying all aspects of human language processing — from phonological, lexical, semantic, or syntactic analysis to pragmatic and discourse-level interpretation. The conference covers a broad range of topics, including computational models, corpus-based studies and statistical mechanisms, cross-linguistic studies, dialogue processing, discourse, language comprehension, language disorders, language production, learning mechanisms, lexical processing, models of acquisition, neurobiology of language processing, parsing and interpretation, pragmatics, prosody, semantic processing, and sign language. This year's program reflects this diversity: we have over 360 contributions from researchers from all over the world. We hope that the stimulating environment that AMLaP offers will create opportunities for everyone attending to exchange ideas and to share and learn about the latest research in language processing.

We are delighted and deeply grateful to have a number of the world's leading scientists with us as keynote speakers to share their unique perspectives on language processing. Furthermore, we are very appreciative of our oral and poster presenters for bringing their insights, as well as to all attendees and reviewers. Together it is our hope that we will contribute to make this conference a great success.

Of course, the organization of such a conference would not have been possible without the valuable assistance of many people from the BCBL administrative staff. We would like to thank especially Leire Arietaleanizbeascoa, Maialen Garcia, and Oihana Vadillo.

We hope you enjoy the conference and your visit to Donostia-San Sebastián.

Manuel Carreiras, Amaia Carrión-Castillo, Brendan Costello, Efthymia Kapnoula, Simona Mancini, Clara Martin, Ileana Quiñones, and Antje Stoehr

REVIEW COMMITTEE

Anne Abeille, Miriam Aguilar, F.-Xavier Alario, Manabu Arai, Yana Arkhipova, Emily Atkinson, Markus Bader, Anna Banaszkiwicz, Cristina Baus, Emmanuel Biau, Esti Blanco-Elorrieta, Rain Bosworth, Francesca Branzi, Mara Breen, Laurel Brehm, Sarah Brown-Schmidt, Marc Brysbaert, Sendy Caffarra, Marco Calabria, Katy Carlson, Matthew Carlson, Naomi Caselli, Giovanni Cassani, Tiphaine Caudrelier, Franklin Chang, Emmanuel Chemla, Youngon Choi, Kiel Christianson, Charles Clifton, Saveria Colonna, Ruth Corps, Matthew Crocker, Chris Cummins, Ian Cunnings, Diego de León Rodríguez, Greig de Zubicaray, Julien Diard, Brian Dillon, Mariapaola D'Imperio, Jakub Dotlačil, Karen Emmorey, Leigh Fernandez, Pilar Ferré Romeu, Victor Ferreira, Ruth Filik, Francesca Foppolo, Alice Foucart, Candice Frances, Stefan Frank, Lyn Frazie, Anne Therese Frederiksen, Raquel Freitag, Cheryl Frenck-Mestre, Tom Fritzsche, Alberto Furgoni, Chiara Gambi, Alan Garnham, Maria Garraffa, Silvia Gennari, Heidi Getz, Edward Gibson, Alexander Göbel, Maria Goldshtein, Zenzi Griffin, Nino Grillo, Maria Teresa Guasti, Sara Guediche, Eva Gutierrez-Sigut, John Hale, Adriana Hanulikova, Robert Hartsuiker, Charlotte Hauser, Barbara Hemforth, Jonathan Henner, Masako Hirotsu, Barbara Höhle, William Horton, Jana Hosemann, Samar Husain, E. Matthew Husband, Aine Ito, Kiwako Ito, Iva Ivanova, Esther Janse, Juhani Järvikivi, Edith Kaan, Elsi Kaiser, Yuki Kamide, Natalia Kartushina, Kalliopi Katsika, Gerrit Kentner, Evan Kidd, Vadim Kimmelman, John Kingston, Pia Knoeferle, Jean-Pierre Koenig, Lars Konieczny, Hamutal Kreiner, Franziska Kretschmar, Helene Kreysa, Anuenue Kukona, Chigusa Kurumada, Dave Kush, Nayoung Kwon, Sol Lago, Vicky Lai, Anna Laurinavichyute, Laurel Lawyer, Sarah Hye-yeon Lee, Suzanne Lesage, Charles Lin, Maria Lobo, Paula Luegi, James Magnuson, Marcus Maia, Mora Maldonado, Stéphanie Massol, Julien Mayor, Kevin McManus, Aya Meltzer-Asscher, Michael Meng, Barbara Mertins, Katherine Messenger, Jelena Mirkovic, Nicola Molinaro, Shota Momma, Savithry Namboodiripad, Pádraig O'Seaghda, Rachel Ostrand, Dario Paape, Dan Parker, Umesh Patil, Nikole Patson, Thomas Pechmann, Vitoria Piai, Martin Pickering, Maria Pinango, Anisia Popescu, Céline Pozniak, Dorothea Pregla, Péter Rácz, François Rigalleau, Leah Roberts, Hannah Rohde, Douglas Roland, Camilo R. Ronderos, Rachel Ryskin, Amanda Rysling, Mikel Santesteban, Andrea Santi, Elizabeth Schotter Petra Schumacher, Gyu-Ho Shin, Cynthia Siew, Shayne Sloggett, Garrett Smith, Sergio Soares, Shari Speer, Adrian Staub, Linnaea Stockall, Kate Stone, Patrick Sturt, Jakub Szewczyk, Whitney Tabor, Louis ten Bosch, Gabriel Thiberge, Guillaume Thierry, Giuseppina Turco, Shravan Vasishth, Sarah Verlage, Margreet Vogelzang, Titus von de Malsburg, Tessa Warren, Isabell Wartenburger, Duane Watson, Katherine White, Eva Wittenberg, Masaya Yoshida.

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CONFERENCE PROGRAM – THURSDAY, AUGUST 31st

08:00 - 08:50 **Registration & Welcome Coffee**

08:50 - 09:00 **Opening**

09:00 - 10:00 **Keynote: Vitória Piai: Production is (not) comprehension (and what can the brain tell us about that?)**

10:00 - 10:40 **Oral Session 1**

10:00-10:20 (O.S.1.1.) Development of a Language Localizer Task for Developmental Comparisons using Multi-Modal fMRI and fNIRS Imaging. *Sara Sanchez-Alonso, Isabel Nichoson, Rebecca Canale & Richard Aslin*

10:20-10:40 (O.S.1.2.) Statistical and Syntactic Information Facilitate Verb Learning by Resolving Ambiguity in Different Ways. *Yayun Zhang, Jing Wang, Ping Li & Chen Yu*

10:40 - 11:10 **Coffee break**

11:10 - 12:30 **Oral Session 2**

11:10-11:30 (O.S.2.1.) Does ChatGPT resemble humans in language use? *Zhenguang Cai, David Haslett, Xufeng Duan, Shuqi Wang & Martin Pickering*

11:30-11:50 (O.S.2.2.) A simple, integrated model of eye-movement control and dependency completion during reading. *Garrett Smith, Maximilian Rabe, Shravan Vasishth & Ralf Engbert*

11:50-12:10 (O.S.2.3.) Error propagation explains event-related potentials in second-language learning. *Stephan Verwijmeren, Stefan Frank, Hartmut Fitz & Yung Han Khoe*

12:10-12:30 (O.S.2.4.) Hebbian Neural Networks for Statistical Learning. *Angel Eugenio Tovar*

12:30 - 14:00 **Lunch break** (on your own)

CONFERENCE PROGRAM – THURSDAY, AUGUST 31st

14:00 - 15:00 **Oral Session 3**

14:00-14:20 (O.S.3.1.) Do Language Models learn the specificity of parasitic gaps? *Adèle Hénot-Mortier*

14:20-14:40 (O.S.3.2.) Megastudy evidence for processing cost differences in plural allomorph production. *Jane Li & Colijn Wilson*

14:40-15:00 (O.S.3.3.) Frequency attenuation effects in masked repetition priming: a large-scale online study. *Roberto Petrosino & Diogo Almeida*

15:00 - 16:30 **Poster Session I & Coffee break**

16:30 - 17:30 **Keynote: James Magnuson: Prediction, feedback, and learning in models of spoken language processing**

CONFERENCE PROGRAM – FRIDAY, SEPTEMBER 1st

09:00 - 10:00 **Keynote: Esti Blanco-Elorrieta. What is the bilingual brain?**

10:00 - 10:40 **Symposium: The bilingual brain**

10:00-10:20 (O.S.1.1.) Cross-dialectal influence on biletal processing: Evidence from Norwegian ERPs. *Jade Sandstedt, Maki Kubota, Merete Anderssen, Jeannique Anne Darby, Stig Helset, Yanina Prystauka, Jason Rothman, Elahe Tavakoli & Øystein Vangsnes*

10:20-10:40 (O.S.1.2.) Neural mechanisms of extreme language control in bimodal bilinguals. *Idil Gemici, Alexis Hervais-Adelma & Rabia Ergin*

10:40 - 11:10 **Coffee break**

11:10 - 12:30 **Oral Session 4**

11:10-11:30 (O.S.4.1.) Activation of ASL signs during sentence reading for deaf readers: evidence from eye-tracking. *Emily Saunders, Jonathan Mirault & Karen Emmorey*

11:30-11:50 (O.S.4.2.) L2 difficulties in the perception of tones: Phonological universals or domain-general aptitude? *Chao Zhu & Joãõ Veríssimo*

11:50-12:10 (O.S.4.3.) Predictive processing during novel word learning: ERP measures of vowel harmony. *Berrak Muftuoglu & Alba Tuninetti*

12:10-12:30 (O.S.4.4.) Language dominance and code-switching shape vowel production in Basque-Spanish bilinguals. *Peng Li, Clara Martin & Natalia Kartushina*

12:30 - 14:00 **Lunch break** (on your own)

14:00 - 15:00 **Oral Session 5**

14:00-14:20 (O.S.5.1.) Memory retrieval and illusion of grammaticality in garden-path reanalysis. *Yang Fan & E. Matthew Husband*

14:20-14:40 (O.S.5.2.) Processing agreement morphology indexing more than one feature activates both features independently: Evidence from Polish VWP. *Zuzanna Fuchs*

CONFERENCE PROGRAM – FRIDAY, SEPTEMBER 1st

14:40-15:00 (O.S.5.3.) The role of goal in sentence processing. *Anna Laurinavichyute, Himanshu Yadav, Titus von der Malsburg & Shravan Vasishth*

15:00 - 16:30 **Poster Session II & Coffee break**

16:30 - 17:30 **Oral Session 6**

16:30-16:50 (O.S.6.1.) Tracking the prosodic hierarchy in the brain - cortical entrainment in German listeners. *Chantal Oderbolz, Sebastian Sauppe & Martin Meyer*

16:50-17:10 (O.S.6.2.) How informative do we need to be? Asymmetrical effects of informativity in affirmative and negative sentences. *Muxuan He & Elsi Kaiser*

17:10-17:30 (O.S.6.3.) Predictability effect in L2 reading: eye-tracking data. *Svetlana Alexeeva, Daria Chernova, Marina Norkina & Maria Kharchevnik*

For Conference Dinner Registrees ONLY:

20:00 **Bus transfer San Sebastian – Conference Dinner**

20:30 **CONFERENCE DINNER**

23:30 **Bus transfer to San Sebastian**

CONFERENCE PROGRAM – SATURDAY, SEPTEMBER 2nd

09:00 - 10:00 **Keynote: Victor Ferreira: Language Control Requires Control**

10:00 - 10:40 **Oral Session 7**

10:00-10:20 (O.S.7.1.) Memory for Emotional Words in a Recognition Task.
Emilia Ezrina & Virginia Valian

10:20-10:40 (O.S.7.2.) Structural convergence is mediated by perceived linguistic and social proximity. *Christina S. Kim & Gloria Chamorro*

10:40 - 11:10 **Coffee break**

11:10 - 12:30 **Oral Session 8**

11:10-11:30 (O.S.8.1.) How prenominal information contributes to efficient communication in Czech noun phrases. *Jan Chromý, James Brand & Michael Ramscar*

11:30-11:50 (O.S.8.2.) Ranking animacy and discourse status as determinants of pronoun use. *Markus Bader & Yvonne Portele*

11:50-12:10 (O.S.8.3.) Does informativity modulate linearization preferences in reference production? *Muqing Li, Noortje J. Venhuizen, Torsten Kai Jachmann, Heiner Drenhaus & Matthew W. Crocker*

12:10-12:30 (O.S.8.4.) Distributed Neural Representations for Semantic Structures During Sentence Production. *Laura Giglio, Peter Hagoort & Markus Ostarek*

12:30 - 14:00 **Lunch break** (on your own)

14:00 - 15:30 **Poster Session III & Coffee break**

15:30 – 16:30 **Oral Session 9**

15:30-15:50 (O.S.9.1.) A noisy-channel explanation of the comparative illusion. *Yuhan Zhang, Carina Kauf & Edward Gibson*

15:50-16:10 (O.S.9.2.) Individual differences in predictive processing in a verb-final language. *Himanshu Yadav & Samar Husain*

16:10-16:30 (O.S.9.3.) The time course of sentence planning in English. *Jeonghwa Cho & Julie Boland*

CONFERENCE PROGRAM - POSTER SESSION I

15:00 - 16:30 Thursday, August 31st

PS.1. 1. Grammatical gender agreement in bilingual code-switching: Representational and processing considerations. *Mandy Cartner, Aya Meltzer-Asscher & Julia Horvath*

PS.1. 2. Enhanced reading skills are associated with auditory spatial attentional rebalance induced by the exposure to dual-language contexts. *Marie Lallier, Jose Perez-Navarro & Mikhail Ordin*

PS.1. 3. The Role of Linguistic Factors in the Retention of Verbatim Information: An Eye-Tracking Study on Reading in L1 and L2 German. *Andreas Opitz, Denisa Bordag & Alberto Furgoni*

PS.1. 4. Transiting to Frequency Tagging: Using fast word presentation rate to test reduced emotional sensitivity in the second language. *Olivia Molina-Nieto, Marcin Naranowicz & Guillaume Thierry*

PS.1. 5. Decoding the bilingual advantage: Mixed evidence from 4 executive function tasks. *Emily Thomas, Bidisha Som & Abhishek Shrivastava*

PS.1. 6. Model of infant vocabulary acquisition through mental state modeling and reinforcement learning. *Shuta Fujita & Yasuhiro Minami*

PS.1. 7. Extending TRACE with realistic feature, phoneme, and word inventories. *Nikita Sossounov & James Magnuson*

PS.1. 8. Leveraging context for perceptual prediction using word embeddings. *Georgia-Ann Carter, Paul Hoffman & Frank Keller*

PS.1. 9. Modeling cortical tracking of statistical learning in simple recurrent networks. *Qihui Xu & James Magnuson*

PS.1. 10. Contrastive neural network reveals the structure of neuroanatomical variation within bilingualism. *Wei Li, Aidas Aglinskas & Joshua Hartshorne*

PS.1. 11. Gender mismatch in ellipsis: French stripping. *Emma Kious, Anne Abeillé & Yanis Da Cunha*

PS.1. 12. Communicative Feedback in Language Acquisition. *Mitja Nikolaus, Laurent Prévot & Abdellah Fourtassi*

PS.1. 13. Orthographic interference in cognates: aspects of the relationship between central planning and motor execution of cognates. *Laura Muscalu & Laura Spinu*

PS.1. 14. Presence of Grammatical Voice Determines Scope of Sentence Planning. *Malavika Krishna Kumar*

CONFERENCE PROGRAM - POSTER SESSION I

15:00 - 16:30 Thursday, August 31st

- PS.1. 15.** Cross-linguistic transfer between native language and English as a second language. *Hessu Yun, Wei Li & Joshua Hartshorne*
- PS.1. 16.** The influence of translation ambiguity in L2 on reading in L1. *Debra Jared, Xuan Pan, Yae-Ram Kim, Alexandra Sherwin & Pierre Cormier*
- PS.1. 17.** Units of perception in spontaneous speech. *Tiia Winther-Jensen*
- PS.1. 18.** Predictive processing in HL Syrian Arabic and cL2 German. *Nadine Kolb, Merete Anderssen & Jason Rothman*
- PS.1. 19.** Language-Switching Cost in Chinese-English Bilingual Reading Comprehension: Evidence from Eye-Tracking. *Danyi Chen & Kiel Christianson*
- PS.1. 20.** How does the creation of new semantic relationships in dialogue impact long-term semantic representations? *Alicia Fasquel, Wassila El Mardi, Isabelle Bonnotte, Dominique Knutsen & Angèle Brunellière*
- PS.1. 21.** L2 proficiency modulates the distinction between personal and demonstrative pronouns in Russian–German bilinguals. *Clare Patterson, Petra B. Schumacher & Irina Sekerina*
- PS.1. 22.** Share the code, not just the data. *Anna Laurinavichyute, Himanshu Yadav & Shravan Vasishth*
- PS.1. 23.** The impact of mirative markers on self-paced reading of unexpected words. *Benjamin Menashe, Hadar Altshuler-Frenkel, Yael Greenberg & Michal Ben-Shachar*
- PS.1. 24.** Is Reading The Same As Translation In Young Multi-lectal Speakers? *Björn Lundquist, Anya Vinichenko & Maud Westendorp*
- PS.1. 25.** Aging increases false remembering of words predicted but not seen. *Katja Haeuser & Jutta Kray*
- PS.1. 26.** Does speaker’s accent modulate phonological prediction? *Marco Sala, Laura Casalino, Francesco Vespignani & Francesca Peressotti*
- PS.1. 27.** Examining register and semantic verb-argument congruence effects: An eye-tracking reading study. *Ana-Maria Pleşca, Katja Maquate & Pia Knoeferle*
- PS.1. 28.** Is phonotactic repair of onset clusters modulated by listener expectations? *Max J. Kaplan & Amanda Rysling*

CONFERENCE PROGRAM - POSTER SESSION I

15:00 - 16:30 Thursday, August 31st

- PS.1. 29.** Transfer effects or a learning mechanism? Pronoun resolution in adult L2 learners of German by speakers of null- and overt-subject languages. *Anna Czypionka, Angelika Golegos, Lisa Hindelang, Gladys Laporte & Theodoros Marinis*
- PS.1. 30.** Real-time processing of ditransitive events in German: An eye-tracking study. *Judith Schlenter & Marit Westergaard*
- PS.1. 31.** The processing of non-canonical verb-subject orders in Italian: Does the type of verb matter? *Andrea Listanti, Sol Lago & Jacopo Torregrossa*
- PS.1. 32.** BA and consequences: unspecific morphosyntactic cues shape interpretation (but not prediction) of upcoming entities in Mandarin comprehension. *Fang Yang, Holly Branigan & Martin Pickering*
- PS.1. 33.** Greater prediction error does not lead to better syntactic adaptation: Evidence from Chinese ambiguity resolution. *Zeping Liu & Chien-Jer Charles Lin*
- PS.1. 34.** Investigating the real-time processing of register in spoken language comprehension. *Angela Patarroyo, Katja Maquate, Aine Ito & Pia Knoeferle*
- PS.1. 35.** Similarity-based interference impairs comprehension: The case of Animacy. *Naama Gidron, Tal Ness & Aya Meltzer-Asscher*
- PS.1. 36.** The relationship between individual differences in sentence reading, parsing and text comprehension in children. *Mads Poulsen, Jessie Leigh Nielsen & Rikke Vang Christensen*
- PS.1. 37.** Learning effects in the course of a reading experiment. *Jan Chromý & Fabian Tomaschek*
- PS.1. 38.** Development of an online auditory working memory test for L2 learners. *Yutaka Yamauchi*
- PS.1. 39.** Is there a relationship between logical reasoning and susceptibility to linguistic illusions? *Dario Paape*
- PS.1. 40.** Predictive Eye Looks in L2 English Speakers are Easily Disrupted by Cognitive Load. Christopher Allison, Leigh Fernandez & Thomas Lachmann
- PS.1. 41.** The effect of similarity-based interference in SOV languages -- Evidence from Hindi. *Samar Husain, Apurva Apurva, Ishita Arun & Himanshu Yadav*
- PS.1. 42.** Auditory Perceptual Simulation (APS) aids recovery from garden-paths. *Kiel Christianson, Laura P. Valderrama, Sarah-Elizabeth Deshaies, Danyi Chen & Jack Dempsey*

CONFERENCE PROGRAM - POSTER SESSION I

15:00 - 16:30 Thursday, August 31st

PS.1. 43. Early effect for basic syntax processing in language comprehension. *Bissera Ivanova, Deirdre Bolger, Benjamin Morillon, Liina Pykkänen & Kristof Strijkers*

PS.1. 44. Reading Comprehension while naturalistic reading in adolescent with different reading abilities: an EEG study. *Marina Norkina, Alina Zhunussova, Alexandra Berlin Khenis, Anastasiia Streltsova & Tatiana Logvinenko*

PS.1. 45. The effects of contextual and morphosyntactic information on linguistic prediction and wh-question interpretation. *Matthias Reiner, Petra Hendriks & Esther Ruigendijk*

PS.1. 46. The role of auditory working memory in L2 simultaneous oral reproduction processing. *Yutaka Yamauchi*

PS.1. 47. Listeners prioritize acoustic information over orthographic information in rate normalization. *Giulio Severijnen, Hans Rutger Bosker & James McQueen*

PS.1. 48. Language Competence in Parkinson's Disease: A Systematic Review of 20 Years of Research. *Maura Panozzo Chiomento, Maria Vender & Denis Delfitto*

PS.1. 49. Metacognition of language and domain-general abilities in the acute phase after stroke. *Karen Arellano-Garcia, David Soto, Maria del Mar Freijo & Simona Mancini*

PS.1. 50. Relationship between prediction error processing and language in autistic and non autistic children. *Fanny Papastamou, Charlotte Dumont, Marie Belenger, Arnaud Destrebecqz & Mikhail Kissine*

PS.1. 51. Language Deficits in Children With Developmental Language Disorder Across Slavic Languages: Systematic Review. *Marina Norkina, Elizaveta Ivanova, Anastasia Sukmanova & Alisa Kosikova*

PS.1. 52. Surface vs. deep anaphora and gender mismatch in Romanian. *Gabriela Bîlbîie*

PS.1. 53. Language Control over Structural Representation in Spanish-English Bilinguals. *Anahy Barragan-Diaz & Iva Ivanova*

PS.1. 54. Does syntactic category constrain semantic interference during sentence production? A replication of Momma et al. (2020). *Constantijn van der Burght, Lorien Schipperus & Antje Meyer*

PS.1. 55. Syntax drives default language selection in bilinguals. *Jessie E. Quinn, Victor S. Ferreira, Matthew Goldrick & Tamar H. Gollan*

CONFERENCE PROGRAM - POSTER SESSION I

15:00 - 16:30 Thursday, August 31st

PS.1. 56. Word order regularisation is not driven by processing demands in language use. *Björn Lundquist, Paulina Lyskawa & Jade Sandstedt*

PS.1. 57. Fast Talkers Seem More Proficient But Might Just Be Cognitively Sharper. *Dalia Garcia & Tamar Gollan*

PS.1. 58. Discourse Accessibility in Tagalog Syntactic Choice: A Sentence Production Study. *Norielle Adricula*

PS.1. 59. Effects of clause order and connective type on children's production of adverbial clauses. *Shijie Zhang, Silke Brandt & Anna Theakston*

PS.1. 60. Lexical Alignment in Bilinguals. *Diana Uribe, Anahy Barragan-Diaz, Ivanna Delgado & Iva Ivanova*

PS.1. 61. Multilingualism does not affect time reference production in L1: Evidence from academics. *Valantis Fyndanis, Sarah Cameron, Giorgio Arcara, Nina Hagen Kaldhol, Monica I. Norvik & Hanne Gram Simonsen*

PS.1. 62. Electrophysiological responses associated with character amnesia in Chinese handwriting. *Xufeng Duan, Zhenguang Cai & Bo Yao*

PS.1. 63. Direct retrieval of orthographic representations in Chinese handwritten production: Evidence from a dynamic causal modelling study. *Jieying He & Qingfang Zhang*

PS.1. 64. Predicting picture naming scores from self-report questions: A little immersion goes a long way, and self-rated proficiency matters more than percent use. *Anne Neveu & Tamar H. Gollan*

PS.1. 65. Does egonet structure modulate linguistic priming? *Kerime Eylul Eski & Luca Onnis*

PS.1. 66. How readers process verbal and pictorial information in multimodal texts: a review of eye-tracking studies past 10 years. *Anastasiia Konovalova*

PS.1. 67. The effect of contextual informativity on collocation learning and retention. *Inés de la Viña, Christina Kim & Gloria Chamorro*

PS.1. 68. Belief of Speakers' Linguistic Competence Modulates the N400 Effect Elicited by Inconsistent Lexical Use. *Hanlin Wu, Xufeng Duan & Zhenguang Cai*

PS.1. 69. Away from the edge: early automatic decomposition of morphologically complex words in Visual Word Form Area. *Samantha Wray, Suhail Matar, Sherine Bou Dargham, Linnaea Stockall & Alec Marantz*

CONFERENCE PROGRAM - POSTER SESSION I

15:00 - 16:30 Thursday, August 31st

- PS.1. 70.** The role of tone in lexical access. *Zifeng Liu, Ioana Chitoran & Giuseppina Turco*
- PS.1. 71.** German demonstrative pronouns in contrast. *Derya Cokal, Robert Voigt & Klaus von Heusinger*
- PS.1. 72.** Reversing the Word Order of Collocations. *Wanyin Li, Bene Bassetti & Steven Frisson*
- PS.1. 73.** Seeing affixes everywhere: Position-Independent Recognition of Tagalog Infixes. *Dave Kenneth Cayado, Samantha Wray & Linnaea Stockall*
- PS.1. 74.** Use of L1 lexical overlap in initial foreign-language speech segmentation. *Katie Von Holzen, Marie Schnieders & Holger Hopp*
- PS.1. 75.** Native-Like L2 Morphological Processing of English Derived Words: An ERP Study. *Jonah Lack, Sui Lung Sze & Yoonsang Song*
- PS.1. 76.** Processing Turkish case markers: Frequency vs morphosyntactic complexity. *Metehan Oğuz & Elsi Kaiser*
- PS.1. 77.** The development on early phonological networks: An analysis of individual longitudinal vocabulary growth. *Judith Kalinowski, Laura Pede, Michaela Vystrcilova, Alexander Ecker & Nivedita Mani*
- PS.1. 78.** Cortical Tracking of Native and Non-native Speech by Monolingual and Bilingual Four-month-old Infants. *Giulia Mornati, Nicola Molinaro & Marina Kalashnikova*
- PS.1. 79.** The relation of home literacy environment to brain specialization for phonological and semantic processing. *Anna Banaszekiewicz, Alisha B. Compton, Jin Wang & James R. Booth*
- PS.1. 80.** An Improved Multilingual Approach for Presurgical Mapping of Glioma Patients. *Ileana Quiñones, Sandra Gisbert, Lucia Amoruso, Lucia Manso-Ortega, Santiago Gil-Robles, Iñigo Pomposo, Garazi Bermudez & Manuel Carreiras*
- PS.1. 81.** A time-frequency investigation of native, dialectal and foreign accent processing. *Trisha Thomas, Irene Bernardi, Clara D. Martin & Sendy Caffarra*
- PS.1. 82.** Electrophysiological study of visual statistical learning in pre-school ASD children. *Marine Petit & Arnaud Destrebecqz*
- PS.1. 83.** Rethinking the role of the right hemisphere: Intraoperative mapping of social abilities in awake patients undergoing surgery for right-sided lesions. *Laura de Frutos-Sagastuy, Ileana Quiñones, Santiago Gil Robles, Iñigo Pomposo, Garazi Bermudez, Manuel Carreiras & Lucia Amoruso*

CONFERENCE PROGRAM - POSTER SESSION I

15:00 - 16:30 Thursday, August 31st

- PS.1. 84.** Electrophysiological correlates of semantic integration of taboo words in natural and synthesized speech in the context of bilingualism. *Justyna Gruszecka, Katarzyna Jankowiak & Rafał Jończyk*
- PS.1. 85.** Decoding bilingual experience from resting-state MEG networks. *Lucia Amoruso, Ileana Quiñones, Adolfo M. Garcia & Manuel Carreiras*
- PS.1. 86.** A novel method for detecting onsets of experimental effects in visual world eye-tracking. *João Veríssimo & Sol Lago*
- PS.1. 87.** How grammatical gender agreement modulates the emergence of the missing V2 illusion in Hebrew. *Edward Kishinevsky & Aya Meltzer-Asscher*
- PS.1. 88.** Pronoun Position Modulates Interference from Inappropriate Phrases During Antecedent Retrieval. *Alba Jorquera Jiménez de Aberásturi, Dave Kush & Jorge González Alonso*
- PS.1. 89.** Prominence relations between propositional and individual referents. *Timo Buchholz, Jet Hoek & Klaus von Heusinger*
- PS.1. 90.** Investigating active gap filling inside Norwegian embedded questions. *Anastasia Kobzeva & Dave Kush*
- PS.1. 91.** Processing Which-questions in Romanian: A visual-world eye-tracking study with adults and children. *Anamaria Bentea & Theo Marinis*
- PS.1. 92.** Why do we use fragments? - Testing the predictions of a game-theoretic approach. *Robin Lemke*
- PS.1. 93.** Evidence from child Romanian for the conjunctive interpretation of disjunction. *Adina Camelia Bleotu, Rodica Ivan, Gabriela Bîlbîie, Mara Panaitescu, Monica Casa, Anton Benz, Lyn Tieu & Andreea Nicolae*
- PS.1. 94.** Pragmatic Implicature Processing in ChatGPT. *Zhuang Qiu, Xufeng Duan, Zhenguang Cai & Nan Zhao*
- PS.1. 95.** An experimental study on social meanings of modal concord in English. *Mingya Liu & Stephanie Rotter*
- PS.1. 96.** An ERP Study on the Pragmatic Processing of Korean Honorifics and Politeness. *Hyeyun Jeong, Jiyeong Kim, Haayan Jang, Jieun Kiaer & Sungeun Lee*
- PS.1. 97.** Empathic concern, fantasy, and verbal irony processing. *Megan Bohach, Herbert Colston & Juhani Järvikivi*

CONFERENCE PROGRAM - POSTER SESSION I

15:00 - 16:30 Thursday, August 31st

PS.1. 98. The Pragmatic and Syntactic Properties of Definiteness in Modern Hebrew: evidence from on-line tasks (self-paced reading and self-paced listening) and off-line tasks (reading acceptability judgment task and a listening acceptability judgment task). *Dana Plaut-Forckosh & Natalia Meir*

PS.1. 99. The Processing Difference between Metaphor and Simile: Evidence from a Cross-Modal Priming Study. *Xinxin Yan*

PS.1. 100. What a difference a syllable makes - rhythmic oral reading of conventional poems. *Judith Beck & Lars Konieczny*

PS.1. 101. Naturalistic prosody leads to acceptable resumptive pronouns in English: Evidence from audio stimuli. *Yourdanis Sedarous, Felicia Bisnath & Savithry Namboodiripad*

PS.1. 102. Garden-path no more: How prosody resolves the Complement Clauses / Relative Clauses ambiguity. *Nino Grillo, Andrea Santi, Miriam Aguilar, Leah Roberts & Giuseppina Turco*

PS.1. 103. The role of metrical structure (syllables & feet) in L1 and L2 loanword recognition. *Isabella Fritz, Aditi Lahiri & Sandra Kotzor*

PS.1. 104. Memory consequences of word predictability in the visual world. *Joost Rommers, Elle Milne, Thomas J. Alexander, Lucas K. Andersen & Georgia K. Rubidge*

PS.1. 105. What's in a face emoji? An experimental study of visually similar face emojis. *Lea Fricke, Patrick Grosz & Tatjana Scheffler*

PS.1. 106. Listeners show better memory for non-native (L2) than native (L1) speech. *Feride Akalan, Julia Stasova & Agnieszka Konopka*

PS.1. 107. Effects of predictability and plausibility on context updating. *Miriam Brockmeyer*

PS.1. 108. Processing temporal concord and modality: A self-paced reading study on you and hui in Taiwan Mandarin. *Aymeric Collart*

PS.1. 109. The influence of contextual predictability on subordinate bias effect when reading Chinese biased homographs: Evidence from eye movements. *Jie-Li Tsai*

PS.1. 110. A crossmodal comparison of language-brain entrainment in spoken and signed languages. *Chiara Luna Rivolta, Brendan Costello, Mikel Lizarazu & Manuel Carreiras*

PS.1. 111. Effects of age of acquisition on sign language processing in hearing bimodal bilinguals. *Anna Banaszkiewicz & Brendan Costello*

CONFERENCE PROGRAM - POSTER SESSION I

15:00 - 16:30 Thursday, August 31st

PS.1. 112. Negative islands do not block active gap filling. *Zirui Huang & Matthew Husband*

PS.1. 113. A Dataset for Physical and Abstract Plausibility and Sources of Human Disagreement. *Annerose Eichel & Sabine Schulte im Walde*

PS.1. 114. Bilinguals predict words using frequencies not features. *Sarah Phillips & Ailís Cournane*

PS.1. 115. Sensorimotor traces in temporal semantics: Evidence from mouse tracking during line bisection. *Anastasia Malyshevskaya, Alex Miklashevsky, Martin H. Fischer, Christoph Scheepers, Yury Shtyrov & Andriy Myachykov*

PS.1. 116. Comparing L2 word learning using orthography versus visual referents. *Mathew Cieśla, Katarzyna Jankowiak, Maksym Pozdniakov & Efthymia Kapnoula*

CONFERENCE PROGRAM - POSTER SESSION II

15:00 - 16:30 Friday, September 1st

PS.2. 1. Accuracy level of reading Japanese Kanji words and Japanese vocabulary size among Korean (L1) – Japanese (L2) bilingual children. *Yeongsil Ju & Ami Sambai*

PS.2. 2. The effects of vowel length, vowel spelling, and L1 on consonant doubling decisions in English. *Candice Frances, Eugenia Navarra-Barindelli & Clara Martin*

PS.2. 3. Testing the Bilingual NP Hypothesis: Evidence from Arabic-English Code-Switching. *Ji Young Shim, Heeju Hwang & Tommi Leung*

PS.2. 4. The role of executive functions in bilingual language control in children. *Elisabet García González, Jussi Jylkkä & Minna Lehtonen*

PS.2. 5. Local syntactic coherence effects in GPT3 surprisals. *Lars Konieczny, Mateo Cortes, Tobias Hoffmann & Henrik Lorenzen*

PS.2. 6. Can Large Language Model Surprisal Capture the Informativity Bias in Human Language Processing? *Hailin Hao & Muxuan He*

PS.2. 7. Shallowly accurate but deeply confused - how language models deal with antonyms. *Adèle Hénot-Mortier*

PS.2. 8. Modeling Lexical Semantics: from Concrete to Abstract. *Casey Kennington*

PS.2. 9. The role of computational optimization in functional specialization of wordform representation. *Enes Avcu, Kevin Brown & David Gow*

PS.2. 10. Using cross-language automatic speech recognition and pronunciation variants to investigate voicing in European Portuguese fricatives. *Anisia Popescu, Martine Adda-Decker, Ioana Vasilescu & Lori Lamel*

PS.2. 11. Syntactic Processing Load in Consecutive Interpreting in each Stage. *Qianxi Lv, Chiyue Zhang, Yeting Shen, Yiman Zhang, Wenxuan Sun & Yiwen Fu*

PS.2. 12. Color Perception in Bilinguals is Momentarily modulated by Active Language. *Akvile Sinkeviciute, Julien Mayor, Mila Vulchanova & Natalia Kartushina*

PS.2. 13. Investigating the component processes underlying rapid automatized naming (RAN) across languages: Evidence from Chinese-English bilinguals. *Ruofan Wu & Hugh Rabagliati*

PS.2. 14. Ten years of linguistic diversity in language processing conferences. *Aymeric Collart*

CONFERENCE PROGRAM - POSTER SESSION II

15:00 - 16:30 Friday, September 1st

PS.2. 15. No cross-linguistic variation in Spanish and English wh-island effects. *Claudia Pañeda, Sandra Villata, Dave Kush & Jon Sprouse*

PS.2. 16. Exploring differences and similarities in emotional conceptualization between Korean and English: A GRID-based study. *Sohyoung Park, Hongoak Yun & Donghoon Lee*

PS.2. 17. Lexical entrainment in human-machine interaction: effects of competence and attention. *Greta Gandolfi, Martin J Pickering & Holly Branigan*

PS.2. 18. No cost for canceling causal inferences in the comprehension of short English narratives. *John Duff, Pranav Anand & Amanda Rysling*

PS.2. 19. Discourse production strategies in Greek/English heritage speakers: a corpus analysis of openings and closings. *Kalliopi Katsika, Aikaterini Tsaroucha & Shanley E.M. Allen*

PS.2. 20. Reading words without sounds: deaf readers of Spanish show greater orthographic sensitivity than hearing peers. *Brendan Costello, Sedy Caffarra, Noemi Fariña, Jon Andoni Duñabeitia & Manuel Carreiras*

PS.2. 21. Event structure predicts temporal models: Evidence from English, German and Polish past-under-past relative clauses. *Elena Marx, Oliwia Iwan & Eva Wittenberg*

PS.2. 22. Complexity in affixation and word length in German word recognition: An ERP study. *Anna Gupta, Charles Redmon, Frans Plank, Aditi Lahiri & Carsten Eulitz*

PS.2. 23. Extraposition of long relative clauses facilitates processing. *Nasimeh Bahmanian & Sol Lago*

PS.2. 24. Mouse Tracking for Reading (MoTR): A New Incremental Processing Paradigm. *Ethan Wilcox, Cui Ding, Ryan Cotterell, Lena Jäger & Mrinmaya Sachan*

PS.2. 25. Determiner asymmetry in Arabic-English code-switching: Evidence against the Matrix Language Frame model. *Ji Young Shim, Heeju Hwang & Tommi Leung*

PS.2. 26. Processing singular “they/their”: Individual differences in political ideology, empathy, emotionality, and honesty affect reading times and acceptability ratings. *Hannah Lam & Juhani Järvikivi*

PS.2. 27. Czech number agreement attraction: Modifying attractors with relative clauses. *Radim Lacina & Jakub Dotlačil*

PS.2. 28. Semantic roles inform sentence processing in 6-year-old Basque children. *Arrate Isasi-Isasmendi, Sebastian Sauppe, Caroline Andrews, Martin Meyer & Balthasar Bickel*

CONFERENCE PROGRAM - POSTER SESSION II

15:00 - 16:30 Friday, September 1st

PS.2. 29. Crosslinguistic patterns of anaphor resolution in English, German, and Polish. *Elena Marx, Oliwia Iwan & Eva Wittenberg*

PS.2. 30. Cognitive control underpins spoken language and reading comprehension: Insights from internet-mediated mouse cursor tracking. *Anuenue Kukona & Nabil Hasshim*

PS.2. 31. Hanging clothes in the refrigerator: Reversed bias in counterfactual semantic integration. *Chengjie Jiang & Ruth Filik*

PS.2. 32. If you hear something (don't) say something: A dual-EEG study on sentence processing in conversational settings. *Elli Tourtouri & Antje Meyer*

PS.2. 33. Learning from prediction error during L2 sentence processing. *Duygu Şafak & Holger Hopp*

PS.2. 34. Prediction and age-related hearing impairment. *Leigh Fernandez, Muzna Shehzad & Lauren Hadley*

PS.2. 35. Situational-functional settings affect evaluation of linguistic register. *Katja Maquate, Olga Buchmüller, Guendalina Reul, Esma Tanis-Cosgun & Pia Knoeferle*

PS.2. 36. Elders and low-literacy readers struggle with official documents featuring non-obligatory control gerund in Italian. *Stefano Rastelli, Pietro Mingardi, Beatrice Iaria, Valerio Damiani, Giada Antonicelli, Paolo Canal & Francesca Pagliara*

PS.2. 37. Do comprehenders use cognitive control to resolve morphosyntactic conflicts during prediction? *Elise Oltrogge, João Veríssimo, Shravan Vasishth & Sol Lago*

PS.2. 38. Reflexive resolution in European and Brazilian Portuguese. *Paula Luegi, Márcio Leitão, Daniela Avila-Varela, Jéssica Gomes & Armanda Costa*

PS.2. 39. The effect of iconic gestures on linguistic prediction in Mandarin Chinese: a visual world paradigm study. *Xuanyi Chen, Junfei Hu, Falk Huettig & Aslı Özyürek*

PS.2. 40. Anticipating the. *Camilo R. Ronderos & Filippo Domaneschi*

PS.2. 41. Does prediction enhance language comprehension? *Hui-Ching Chen & Aine Ito*

PS.2. 42. Morpho-syntactic agreement in English and the perception of speech in noise. *Marcel Schlechtweg*

PS.2. 43. Stick a pen in it: Greater phonological competition in speakers with the pin-pen merger. *Ebony Pearson, Van Liceralde, Wei Lai & Duane Watson*

PS.2. 44. The McGurk Effect in Russian listeners. *Elena Riekhakaynen & Elena Zatevalova*

CONFERENCE PROGRAM - POSTER SESSION II

15:00 - 16:30 Friday, September 1st

PS.2. 45. Global perspectives on speech and language therapy training and practices for multilingual people with aphasia. *Marie Pourquié, Seckin Arslan, Suzan Dilara Tokaç-Scheffer, Ritiene Grima, Valantis Fyndanis, Maria Kambanaros, Silvia Martinez Ferreiro, Amaia Munarriz-Ibarrola, Monica Norvik, Claudia Penalzoza, Grégoire Python, Eva Soroli, Wei Ping Sze, Mohammed Taiebine & Group Multilingual Aphasia Practice*

PS.2. 46. A verbal and non-verbal task battery for first- and second-order theory of mind - data from adults and primary school children from Germany and Greece. *Anna Czypionka, Maria Andreou, Dafni-Vaia Bagioka, Angelika Golegos, Theo Marinis, Eleni Peristeri & Arhonto Terzi*

PS.2. 47. Lexical processing and language interference in Bilingual children with and without Developmental language disorder (DLD). *Stephanie Martin Vega & Laurel Lawyer*

PS.2. 48. MorphoPlay: morphological awareness assessment with a game mobile app. *Carina Pinto, Alina Villalva, Cândida G. Silva, Eduarda Abrantes, Etelvina Lima, Joana Miguel, Rafael Minussi, Sydelle de Souza, Afonso Simão, Carlos Guerra, Catarina Lavos, Marta Fortes, Marta Sousa & Raquel Espirito Santo*

PS.2. 49. Gender but not DLD differentiates children performance in SRT task. *Martyna Bryłka & Hanna Cygan*

PS.2. 50. Word-specific lexical inhibition due to violated predictions. *Ella Yakir & Aya Meltzer-Asscher*

PS.2. 51. Are predictable words retrieved faster for production? *Solveig Castelli, Srdjan Popov, Roel Jonkers & Audrey Bürki*

PS.2. 52. Links between visual attention and language production in children. *Sarah Dolscheid & Martina Penke*

PS.2. 53. Language choice and naming difficulty: Evidence from bilingual degraded picture naming. *Nora Kennis, Martin J. Pickering & Holly P. Branigan*

PS.2. 54. Effects of conceptual processing and social context on semantic interference. *Caitlin Decuyper, Ruth Corps & Antje Meyer*

PS.2. 55. An Experimental Investigation of Unidirectionality in Semantic Extension. *Anna Kapron-King, Simon Kirby & Kenny Smith*

PS.2. 56. Bilingual sentence planning: linguistic and cognitive effects on Grammatical Planning Scope. *Mikael André Albrecht, Allison Wetterlin & Linda Wheeldon*

CONFERENCE PROGRAM - POSTER SESSION II

15:00 - 16:30 Friday, September 1st

PS.2. 57. Testing an information-theoretic approach to the usage of gapping in German. *Bozhidara Hristova, Robin Lemke, Lisa Schäfer, Heiner Drenhaus & Ingo Reich*

PS.2. 58. Is Valence Sound Symbolism Driven by Articulatory Movements? *Ralf Rummer & Anita Körner*

PS.2. 59. The shape of inhibitory control in language context: A study based on Chinese-English bilingual language switching. *Yun-Wei Lee & Aina Casaponsa*

PS.2. 60. The role of the complexity of grammar in a sentence repetition task with Italian preschoolers. *Paolo Lorusso & Andrea Marini*

PS.2. 61. On the interaction between implicit statistical learning and the alternation advantage: Evidence from manual and oculomotor serial reaction time tasks. *Marta Tagliani, Arianna Compostella, Maria Vender & Denis Delfitto*

PS.2. 62. Children's selective interests and their association with caregiver-child interactions and word learning. *Rajalakshmi Madhavan & Nivedita Mani*

PS.2. 63. Statistical learning of a natural language. The role of transitional probabilities in word segmentation at first exposure. *Marie-Christin Flohr, Katie Von Holzen & Sarah Schimke*

PS.2. 64. Non-interactive Bilingualism: a different path for language acquisition? *Charlotte Dumont, Emma Peri, Arnaud Destrebecqz & Mikhail Kissine*

PS.2. 65. Frequency and frequency informed learning effects in a large single-person Estonian word naming experiment. *Kaidi Lõo, Maria Heitmeier, Arvi Tavast & Harald Baayen*

PS.2. 66. Association of lexical access and sentence comprehension with non-linguistic cognitive functions in older people with mild cognitive impairment. *Irina Lobanova, Alina Zabolotskaya, Viktor Savilov, Timur Syunyakov, Marat Kurmyshev, Elena Kurmysheva, Natalia Osipova, Olga Karpenko, Alisa Andryushchenko & Svetlana Malyutina*

PS.2. 67. The role of orthography in explicit and implicit spoken word learning. *Mina Jevtovic, Efthymia Kapnoula & Clara D. Martin*

PS.2. 68. Morpho-phonological complexity and lexical access: An ERP study of English adjectives. *Charles Redmon, Anna Gupta, Carsten Eulitz, Frans Plank & Aditi Lahiri*

PS.2. 69. Exploring the mental lexicon of bilingual children when processing codeswitched determiner phrases. *Raquel Fernández Fuertes, Tamara Gómez Carrero & Juana M. Licerias*

CONFERENCE PROGRAM - POSTER SESSION II

15:00 - 16:30 Friday, September 1st

PS.2. 70. Lexical relations in Spanish-speaking younger adults: an approach to syntactic routes to the mental lexicon. *Marco A. Flores-Coronado, Elsa M. Vargas-García, Aline Minto-García & Natalia Arias-Trejo*

PS.2. 71. Managing lexical co-activation in closely related varieties of Norwegian. *Maud Westendorp, Evelyn Bosma & Göran Söderlund*

PS.2. 72. The role of letter position in orthographic processing: evidence from Russian. *Natalia Slioussar*

PS.2. 73. Use of L1 phonotactics in initial foreign-language speech segmentation. *Katie Von Holzen, Sophia Wulfert & Holger Hopp*

PS.2. 74. Regressive transfer from L2 to L1 in speech production after a study abroad program. *Peng Li, James Emil Flege, Clara Martin & Natalia Kartushina*

PS.2. 75. Language learning under negligible exposure, no instruction, and L1-transfer. An ongoing SPR longitudinal study on the acquisition of obligatory control in L2 Italian. *Stefano Rastelli, Pietro Mingardi, Francesca Pagliara, Beatrice Iaria, Valerio Damiani, Giada Antonicelli & Paolo Canal*

PS.2. 76. Surprisal and Agent Preference jointly predict ERPs in sentence processing. *Eva Huber, Sebastian Sauppe, Arrate Isasi-Isasmendi, Ina Bornkessel-Schlesewsky, Paola Merlo & Balthasar Bickel*

PS.2. 77. Readers immediately understand speakers' source claim: Neurological evidence for Korean evidential markers. *Hongoak Yun, Yunju Nam, Soojeong Kim & Soonja Choi*

PS.2. 78. Cognitive and neural mechanisms of voluntary versus forced language switching in Wu-Mandarin Bilinguals: an fMRI study. *Xinyu Zhao, Qihui Xu, Shengwei Liu, Qianying Zhang & Libo Geng*

PS.2. 79. How Languages Shape Your Brain? Cognitive Control Brain Networks in Bilinguals and Monolinguals. *Lorena Molina-Arcia, Ángel E. Tovar, Eduardo A. Garza-Villarreal & Octavio García*

PS.2. 80. Do surprisal and entropy affect delta-band signatures of syntactic processing? *Sophie Slaats, Antje S. Meyer & Andrea E. Martin*

PS.2. 81. Brain potentials reveal reduced emotional sensitivity in a second language during language production. *Rafał Jończyk, Marcin Naranowicz, Tarik Bel-Bahar, Paweł Korpal, Katarzyna Jankowiak & Katarzyna Bromberek-Dyzman*

CONFERENCE PROGRAM - POSTER SESSION II

15:00 - 16:30 Friday, September 1st

- PS.2. 82.** Grammar interaction in multilingual processing – an eye-tracking study of grammatical case and verbal aspect in heritage Russian. *Natalia Mitrofanova, Serge Minor & Alexandra Bogoyavlenskaya*
- PS.2. 83.** Illusions of Garden-path Recovery are Temporary. *Yang Fan & E. Matthew Husband*
- PS.2. 84.** Comprehenders do posit unforced gaps. *Douglas Roland*
- PS.2. 85.** Competing structural pressures: Active antecedent search modulates gap prediction in Hebrew. *Mandy Cartner, Edward Kishinevsky, Naama Gidron & Aya Meltzer-Asscher*
- PS.2. 86.** Comparing simple and complex Turkish reflexives: Effects of semantic and syntactic factors. *Metehan Oğuz & Elsi Kaiser*
- PS.2. 87.** How do non-native speakers interpret an implausible transitive sentence? *Yue Yu, Holly Branigan, Zhenguang Cai & Martin Pickering*
- PS.2. 88.** Integration and interpretation of doubly quantified sentences in Turkish. *Nehir Aygül & Markus Bader*
- PS.2. 89.** Comprehension and production don't align: Evidence from referential forms in Mandarin Chinese. *Yajun Liu, Kenny Smith & Antonella Sorace*
- PS.2. 90.** Expectations for upcoming content: Do children reason about speakers' informativity goals? *Vilde Reksnes, Alice Rees, Ece Kucuk, Chris Cummins & Hannah Rohde*
- PS.2. 91.** Contextual non-plural interpretations of 'some': Mouse-tracking evidence for quick social reasoning in real time. *Wei Li, Martin Corley & Hannah Rohde*
- PS.2. 92.** Is being pragmatic effortful? Unraveling the cognitive cost of pragmatic processing using pupillometry and reaction times. *Irene Mognon, Simone A. Sprenger, Diletta Comunello & Petra Hendriks*
- PS.2. 93.** Having an eye for irony: when fluid intelligence (but not working memory) helps processing. *Marianna Kyriacou & Franziska Köder*
- PS.2. 94.** An ERP Study on Korean Honorific Marker '-si-'. *Jaewon Oh, Seongeun Lee, Jieun Kjaer & Jiyeon Kim*
- PS.2. 95.** Investigating the effect of prosodic markedness on the interpretation of simple disjunction in Romanian. *Adina Camelia Bleotu, Rodica Ivan, Gabriela Bilbîie, Mara Panaitescu, Monica Casa, Andreea Nicolae, Anton Benz & Lyn Tieu*

CONFERENCE PROGRAM - POSTER SESSION II

15:00 - 16:30 Friday, September 1st

PS.2. 96. Conceptual and pragmatic factors influencing the representations of core event components. *James R. Kesan & Monica L. Do*

PS.2. 97. Processing differences between single and extended metaphors and similes. *Emma K. Mathisen, Nicholas E. Allott & Camilo R. Ronderos*

PS.2. 98. They stole a real Maximowa. The effect of gender congruency on the comprehension of unfamiliar artist-for-work metonymies in German. *Christian Lang, Franziska Kretzschmar & Sandra Hansen*

PS.2. 99. Perception of Emotions in Young Adults with Intellectual Disability: Integration of Speech Channels. *Vered Shakuf & Boaz M. Ben-David*

PS.2. 100. Asymmetries in metrical foot parsing: Evidence from eye tracking. *Charles Redmon, Isabella Fritz, Nina Dumrukic & Aditi Lahiri*

PS.2. 101. Does prosodic prominence speed up language processing? *Barbara Zeyer & Martina Penke*

PS.2. 102. Spotting the lect: a study of multilectally literate adolescents in Norway. *Anya Vinichenko, Unn Røyneland & Øystein Vangsnes*

PS.2. 103. Gestural representations of semantic concepts differ between blind and sighted individuals. *Ezgi Mamus, Laura J. Speed, Gerardo Ortega, Asifa Majid & Asli Özyürek*

PS.2. 104. The L2 advantage in false memory tasks is not tied to linguistic proficiency. *Agnieszka Konopka*

PS.2. 105. It doesn't have to be perfect: Hindi verbs in the VWP. *Myrte Vos, Arpita Gargesh & Gillian Ramchand*

PS.2. 106. Availability of Emotional Words in Mono- and Bilinguals. *Emilia Ezrina & Virginia Valian*

PS.2. 107. Sensorimotor semantic processing differentially facilitates the recognition of native and second language words. *Jonathan Wehnert, Agnieszka Konopka, Katharina von Kriegstein & Brian Mathias*

PS.2. 108. Perfect tense renders events into states: Empirical evidence from individuation. *Natalia Jardon Perez, Elena Marx & Eva Wittenberg*

PS.2. 109. The effects of tense on event representations during processing. *Emma Wing & Pasha Koval*

CONFERENCE PROGRAM - POSTER SESSION II

15:00 - 16:30 Friday, September 1st

PS.2. 110. Gender effects in lexico-semantic access and meaning integration mechanisms. *Katarzyna Jankowiak, Marcin Naranowicz, Joanna Pawelczyk & Dariusz Drążkowski*

PS.2. 111. Quantification and sentence level polarity. *Fredrik Heinat & Eva Klingvall*

PS.2. 112. Effect of signal degradation on sign language intelligibility. *Cristina Tobías Figuerola, Carine Signoret, Emil Holmer & Josefina Andin*

PS.2. 113. Verb semantic structure effects in implicit causality: Evidence from Malay-speaking children and adults. *Radina Mohamad Deli, Holly Branigan & Vicky Chondrogianni*

PS.2. 114. Factors Conditioning Individual Differences In Heritage Language Bilingualism: The Case Of Mandarin Sortal Classifiers. *Jiuzhou Hao, Fatih Bayram, Jorge González Alonso, Theres Grüter, Maki Kubota & Jason Rothman*

PS.2. 115. Representing non-actuality in the online processing of negative and possibility utterances. *Vishal Arvindam, Maxime Tulling & Ailís Cournane*

CONFERENCE PROGRAM - POSTER SESSION III

14:00 - 15:30 Saturday, September 2nd

PS.3. 1. Chinese character recognition in Deaf readers: a lexical decision megastudy. *Philip Thierfelder, Zhenguang G. Cai, Shuting Huang & Hao Lin*

PS.3. 2. Independent effects of ageing and bilingualism on language processing. *Eunice Fernandes, Katrien Segaert, Foyzul Rahman, Allison Wetterlin & Linda Wheeldon*

PS.3. 3. Effects of both ageing and bilingualism on attention and executive functions. *Roksana Markiewicz, Foyzul Rahman, Eunice G. Fernandes, Allison Wetterlin, Linda Wheeldon & Katrien Segaert*

PS.3. 4. The Influence of Language Modes on Heritage Speakers' Speech Categorical Perception: Insights from Mandarin-Taiwanese Bilingual Speakers. *Yu-Hao Chen & Chia-Hsuan Liao*

PS.3. 5. L1 speakers retain conceptualized, L2 learners salient formal grammatical information. *Denisa Bordag, Andreas Opitz & Alberto Furgoni*

PS.3. 6. Adaptive Resonance Theory as a computational model of learning inflection classes. *Peter Dekker, Heikki Rasilo & Bart de Boer*

PS.3. 7. Do large language models identify pseudorelatives in French? *Adèle Hénot-Mortier*

PS.3. 8. An Information Theoretic Analysis of Regressions in Reading. *Ethan Wilcox, Tiago Pimentel, Clara Meister & Ryan Cotterell*

PS.3. 9. Learning English tense from sentential input: a neural network approach. *Xiaomeng Ma*

PS.3. 10. Keep it truly maximal: Excluding random slopes for covariates inflates Type I errors or reduces power. *João Veríssimo*

PS.3. 11. Haitian Creole co-activation facilitates word recognition in Brazilian Portuguese. *Pietra Cassol Rigatti, Mailce Borges Mota & Kenneth Pugh*

PS.3. 12. The role of structural cues and recency in processing a pre-verbal anaphor in Turkish. *Özge Bakay, Faruk Akkuş & Brian Dillon*

PS.3. 13. Mi casa es tu posá: Exploring the bilingual mental lexicon in speakers of Spanish and Palenquero. *Holly Zaharchuk, John Lipski & Janet van Hell*

PS.3. 14. The role of semantic transparency in lexical access in Romance: Evidence from French and Italian. *Irene Fally & Eva Smolka*

CONFERENCE PROGRAM - POSTER SESSION III

14:00 - 15:30 Saturday, September 2nd

PS.3. 15. Lexical and morphological effects on eye movements while reading a sentence corpus in a polysynthetic language. *Nina Zdorova, Olga Parshina, Bela Ogly, Anastasia Ziubanova, Ekaterina Krasikova, Irina Bagirokova, Susanna Makerova, Shamset Unarokova & Olga Dragoy*

PS.3. 16. Meaning Extension of body part term 'HEAD': focusing on directionality. *Jiyeong Kim*

PS.3. 17. Event structure predicts temporal order inferences in discourse comprehension. *Elena Marx & Eva Wittenberg*

PS.3. 18. Event-related potentials elicited by similarity-based interference during subject-verb dependency resolution. *Pia Schoknecht & Shravan Vasishth*

PS.3. 19. Input frequency affects regularization of word order in the Verb Phrase vs Noun Phrase differently: Evidence from comprehension and production of silent gesture. *Monica Do, Simon Kirby & Susan Goldin-Meadow*

PS.3. 20. Cross-linguistic influence from L1 and L2 in Ln Norwegian: comparing offline and online measures. *Brechje van Osch, Merete Anderssen, Natalia Mitrofanova & Ludovica Serratrice*

PS.3. 21. How new information affects coreference in semantically biased contexts: from sentences to dialogues. *Dalia Cristerna Román, Juhani Järvikivi & Evangelia Daskalaki*

PS.3. 22. Don't forget the trace: facilitatory effects on matrix verbs following centre-embedded object relatives. *Leonardo Concetti & Vincenzo Moscati*

PS.3. 23. The Influence of Ambient Noise on Contextual Formation and Lexical Retrieval in Speech Comprehension: Insights from Predictability Effects on the N200, N400, and LPC. *Cheng-Hung Hsin & Chia-Ying Lee*

PS.3. 24. A unified account of the variation in distance effects in sentence comprehension. *Shinnosuke Isono*

PS.3. 25. Reading gender stereotypes: The effects of Personality, Political Ideology, and Gender Identity on gender stereotype processing. *Stephanie Hammond-Thrasher & Juhani Järvikivi*

PS.3. 26. Encouraging prediction enhances predictive eye-movements in L2 speakers. *Aine Ito*

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PS.3. 27. How much core is core-syntax? Age, literacy and obligatory control in the Italian gerund. *Stefano Rastelli, Pietro Mingardi, Beatrice Iaria, Valerio Damiani, Giada Antonicelli & Paolo Canal*

PS.3. 28. Important Predictors of Word Reading and Writing Abilities in Chinese Among Fifth Graders in Mainland China. *Jieping Ou, Ami Sambai & Hiroki Yoneda*

PS.3. 29. Rapid adaptation doesn't mean automatic perception: a non-native accent study. *Dario Fuentes Grandon & Nina Kazanina*

PS.3. 30. The effect of cumulative English exposure on online processing of Spanish grammatical gender in school-aged children. *Alisa Baron & Katrina Connell*

PS.3. 31. The role of visual cues in encoding interference during sentence processing. *Niki Koesterich & Aya Meltzer-Asscher*

PS.3. 32. Working memory modulates parafoveal processing. *Anastasia Stoops & Kiel Christianson*

PS.3. 33. Language learners' eye-movement corpus: Creation, analysis and prediction. *Hui-Chuan Lu, Li Chi Kao, An Chung Cheng & Wen-Hsiang Lu*

PS.3. 34. Influence of Question Types on Multiple-Document Reading Processes in a Second Language: An Eye-Tracking Study. *Yuko Hijikata, Ryuya Komuro, Chikako Hanawa, Na Ta, Ryo Mizugaki, Keiya Tando, Tomoko Ogiso & Yuji Ushiro*

PS.3. 35. Maintaining Syntactic Positions and Thematic Roles in Memory: Evidence from Ditransitive Alternations in English. *Matthew Kogan & Matthew Wagers*

PS.3. 36. Domain-sensitivity of sentence memory and (lack of) temporal contiguity effects. *Lalitha Balachandran, Stephanie Rich & Matt Wagers*

PS.3. 37. On the unfolding of formality-register and morphosyntactic congruence effects in sentence processing: An eye-tracking study. *Valentina N. Pescuma, Katja Maquate, Camilo R. Ronderos, Aine Ito & Pia Knoeferle*

PS.3. 38. The Bilingual Moses Illusion: Evidence for Semantic Illusions in Highly Proficient Spanish-Catalan Bilingual Speakers. *Ana Bautista, Montserrat Comesaña, Juan Haro, Juliana Novo & Pilar Ferré*

PS.3. 39. Transfer in progress: What grammatical aspect can tell us about the mapping of linguistic form and event structure. *Kristian Nicolaisen & Agnieszka Konopka*

PS.3. 40. An empirical investigation of Mandarin island constraint. *Ruihua Mao, Barbara Hemforth & Anne Abeillé*

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- PS.3. 41.** A Study of Null Effects for the Use of Transcranial Direct Current Stimulation (tDCS) in Chinese character handwriting adults with character amnesia. *Yichi Zhang & Zhenguang Cai*
- PS.3. 42.** Semantic memory in schizophrenia spectrum disorder examined in novel probability and likelihood measures of semantic verbal fluency. *Karl Neergaard, Jeffrey Zemla & Rosa Ayesa*
- PS.3. 43.** Short-term memory performance in children with Developmental Language Disorder (DLD). *Hanna B Cygan & Martyna Brylka*
- PS.3. 44.** Processing Difficulties of Relative Clauses in Eastern Armenian. *Mariam Asatryan*
- PS.3. 45.** When valency doesn't count: testing structural constraints on reduced sentences in Italian. *Mauro Vigano, Carlo Cecchetto & Caterina Donati*
- PS.3. 46.** Independent effects of age, education, verbal working memory, locality and morphosyntactic category on verb-related morphosyntactic production: Evidence from healthy aging. *Marielena Soilemezidi, Marina Chrisikopoulou & Valantis Fyndanis*
- PS.3. 47.** Fast and Efficient or Slow and Struggling? Comparing the response times of errors and targets in speeded word production. *Christina Papoutsis, Elli Tourtouri, Vitória Piai, Leonie F. Lampe & Antje Meyer*
- PS.3. 48.** The prosodic word (tone accent phrase) is the core planning unit in Norwegian speech planning/production. *Jade Sandstedt, Bror Magnus S. Strand & Björn Lundquist*
- PS.3. 49.** Lexical Alignment to an Automated Chatbot is Rapid and Driven by Communicative Utility. *Rachel Ostrand, Victor Ferreira & David Piorkowski*
- PS.3. 50.** Individual differences in the production of speech disfluencies. *Franziska Schulz, Ruth Corps & Antje Meyer*
- PS.3. 51.** Does Cross-Language Competition in Bilingual Language Production Always Exist? *Huanhuan Yin, Patrick Sturt & Martin Pickering*
- PS.3. 52.** Linguistic representations matter for pronoun production: evidence from grammatical gender attraction. *Claudia Pañeda, Margaret Kandel, Nasimeh Bahmanian, Mercedes Martínez Bruera, Colin Phillips & Sol Lago*
- PS.3. 53.** Word order priming with German dative experiencer verbs. *Anna Jessen & Robert Hartsuiker*

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- PS.3. 54.** Sentence (pre)-planning or incrementality in neurotypical individuals and persons with aphasia (PWA). *Xabi Ansorena, Manuel Carreiras & Simona Mancini*
- PS.3. 55.** From Brad Pitt to the Garden: The Impact of Agent Accessibility and Time Pressure in Dutch Sentence Production. *Danbi Ahn & Peter Hagoort*
- PS.3. 56.** Syntactic status of numeral classifiers: Evidence from artificial language learning experiments. *Fang Wang, Simon Kirby & Jennifer Culbertson*
- PS.3. 57.** The role of attention for alignment from discourse particles. *Rachel Williams, Diana Salcido-Padilla, Angela Almeida, Kyle Wolff & Iva Ivanova*
- PS.3. 58.** The role of sentence context and feedback in L1 and L2 novel word learning. *Sophie Hoffmann, Annette Ugueto, Brian Mathias, Joost Rommers & Agnieszka Konopka*
- PS.3. 59.** Exploring mechanisms of early language development through cross-lab studies: challenges and opportunities. *Itziar *Lozano, Anna *Duszyk-Bogorodzka, Ingeborg Sophie *Ribu, Agnieszka Dynak, Przemysław Tomalski, Franziska Köder, Nina Gram Garmann & Ewa Haman*
- PS.3. 60.** The effect of labelling and sustained attention during parent-child interaction on novel-word retention. *Ming Yean Sia, Rajalakshmi Madhavan, Xiaoyun Chen & Nivedita Mani*
- PS.3. 61.** The Effects of Input Consistency on Children's Language Learning. *Imme Lammertink, Josje Verhagen & Judith Rispens*
- PS.3. 62.** Cross-language masked prefix priming for early and late bilinguals. *Jeonghwa Cho & Jonathan Brennan*
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- PS.3. 64.** Is lexical competition in spoken-word recognition sensitive to dialect membership? Evidence from mouse tracking. *Alissa Melinger & Anuette Baker-Kukona*
- PS.3. 65.** Analysis and Processing of Low-Frequency complex words: the case of Portuguese blends. *Alina Villalva, Rafael Minussi, José Ferrari & Gustavo Estivalet*
- PS.3. 66.** Carrot or parrot? An eye-tracking study on spoken word recognition in a language attrition context. *Concepción Soto*
- PS.3. 67.** A Verb Sense and its Frame Semantics Representation. *Hristina Kukova*

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PS.3. 68. Neural underpinnings of sentence reading in deaf, native sign language users. *Justyna Kotowicz, Anna Banaszekiewicz, Gabriela Dzięgiel-Fivet, Karen Emmorey, Artur Marchewka & Katarzyna Jednoróg*

PS.3. 69. Wolf-hound vs. sled-dog: ERP evidence reveals that semantic constituent properties are accessed during compound recognition. *Anna Czypionka, Mariya Kharaman & Carsten Eulitz*

PS.3. 70. Uncovering the Neural Mechanisms of Verbal Repetition: An ALE Analysis of Neuroimaging Studies Investigating Repetition of Words and Pseudowords. *Ariane Hohl, Marcelo L. Berthier, María José Torres-Prioris & Diana López-Barroso*

PS.3. 71. How bilingualism influences language processing in the developing brain: a neurobiological perspective. *Chih Yeh, Caroline F. Rowland & Sergio Miguel Pereira Soares*

PS.3. 72. Children's neural stimulus tracking in face-to-face and online video communication. *Fatih Sivridag, Mariella Paul & Nivedita Mani*

PS.3. 73. Predictive audiovisual speech processing with and without mouth cues in cochlear implant users. *Simone Gastaldon, Noemi Bonfiglio, Francesco Vespignani, Flavia Gheller, Davide Brotto, Davide Bottari, Patrizia Trevisi, Alessandro Martini & Francesca Peressotti*

PS.3. 74. Compensation of language function in patients with diffuse low grade gliomas in the left hemisphere evidenced by functional and structural reorganization. *Lucia Manso-Ortega, Santiago Gil-Robles, Iñigo Pomposo, Garazi Bermudez, Manuel Carreiras & Ileana Quiñones*

PS.3. 75. Electrophysiological Correlates of Minimal Phrasal Composition in Comprehension. *Serge Minor, Anna Kamenetski, Natalia Mitrofanova, Charlotte Sant, Myrte Vos & Gillian Ramchand*

PS.3. 76. Do aging and language dominance affect the egocentric bias? *Dorit Segal & Gitit Kavé*

PS.3. 77. The Time-Course of Locality/Structure Constraints and Animacy/Gender Constraints on Anaphor Resolution of Mandarin Ziji and Ta-ziji. *Yi-ching Su, Ming-Lei Chen & Antonella Sorace*

PS.3. 78. Visual Event Representations Facilitate the Processing of Grammatical Case by Russian-German Bilingual Children. *Serge Minor, Natalia Mitrofanova & Marit Westergaard*

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PS.3. 79. Agreement with conjoined subjects involving mismatching person features. *Eva Neu & Brian Dillon*

PS.3. 80. The time course of processing anti-local anaphors in Telugu supports the Local Search Hypothesis. *Vishal Arvindam & Matt Wagers*

PS.3. 81. French wh-in situ: an experimental study. *Ruoxuan Li, Doriane Gras & Caterina Donati*

PS.3. 82. Processing garden-path sentences in European Portuguese: the impact of language properties. *Diana Simões, Paula Luegi, Jéssica Gomes & Armanda Costa*

PS.3. 83. How do people interpret an implausible transitive sentence? *Yue Yu, Holly Branigan, Zhenguang Cai & Martin Pickering*

PS.3. 84. The processing cost of imprecision: A pupillometry study. *Camilo R. Ronderos, Henriette Johansen & Ingrid Lossius Falkum*

PS.3. 85. Different fixation patterns for different adjective types in English, Hindi and Hungarian. *Camilo R. Ronderos & Paula Rubio Fernández*

PS.3. 86. The interplay of pragmatics and prosody in the interpretation of negation scope. *Valentina Apresjan, Nikolay Mikhailov & Natalia Slioussar*

PS.3. 87. Why some phrases are not so attractive: the presence or absence of gender agreement attraction in different constructions. *Natalia Slioussar*

PS.3. 88. Asymmetric processing effects of intra-sentential explanation coherence. *Runyi Yao, Kelsey Sasaki, Daniel Altshuler & E. Matthew Husband*

PS.3. 89. An ERP Study on Cross-Cultural Humor: Taiwanese Subjects' Response to American Sarcastic Insults. *Yi-Ting Yang & Shiao-hui Chan*

PS.3. 90. An experimental study on social meanings of negative concord in English. *Stephanie Rotter & Mingya Liu*

PS.3. 91. Foreign Accent Modulates Perception and Social Evaluation of Critical Statements: Evidence from Event-Related Potentials. *Marcos Domínguez Arriola, Luca Bazzi, Maël Mauchand, Alice Foucart & Marc Pell*

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PS.3. 92. What types of situations trigger sarcasm? A language generation study. *Hyewon Jang, Bettina Braun & Diego Frassinelli*

PS.3. 93. Priming Scalar Alternatives under Negation and by Antonyms in Lexical Decision. *Radim Lacina, Stavroula Alexandropoulou, Eszter Ronai & Nicole Gotzner*

PS.3. 94. Does Priming Prosodic Phrasing Modulate Reading Times? *Dorotea Bevivino, Giuseppina Turco & Barbara Hemforth*

PS.3. 95. Prosody Disambiguates String-Identical Connected Clauses and Relative Clauses. *Buhan Guo, Nino Grillo, Sven Mattys, Andrea Santi, Shayne Sloggett & Giuseppina Turco*

PS.3. 96. Dowty was right: eye-tracking experimenter among agents and themes. *Marta Sánchez-López, Mikel Santesteban & Itziar Laka*

PS.3. 97. Different languages do not prevent joint memory. *Alper Demircan, Natalie Sebanz & Eva Wittenberg*

PS.3. 98. Investigating the role of masculine generics: A large-scale replication and extension in Czech. *Mikuláš Preininger, James Brand, Markéta Ceháková, Adam Kříž & Jan Chromý*

PS.3. 99. The aboutness hypothesis: a new way to explain relative clause processing. *Céline Pozniak & Barbara Hemforth*

PS.3. 100. Quantification, Negation and Set formation. *Eva Klingvall & Fredrik Heintz*

PS.3. 101. Bimodal bilingualism and executive function in hearing children, native signers. *Justyna Kotowicz, Gary Morgan & Bencie Woll*

PS.3. 102. Deafness, bilingualism, and The Big 3: How do length, frequency, and predictability support efficient reading in deaf native signers? *Frances Cooley & Elizabeth Schotter*

PS.3. 103. Placing signs on the spectrum of iconicity. *Anique Schüller & Brendan Costello*

PS.3. 104. Iconicity affects sentence processing: Evidence for incremental language-vision interaction. *Ian Rigby & Elsi Kaiser*

ABSTRACTS

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KEYNOTES

[K-1]

Production is (not) comprehension (and what can the brain tell us about that?)

Vitória Piai ^{1 2}

¹Radboud University, Donders Centre for Cognition, Nijmegen, the Netherlands

²Radboud University Medical Centre, Department of Medical Psychology, Nijmegen, the Netherlands

A general tendency exists in our field to study language production and comprehension separately from each other. In this talk, I will address issues in our definition of “the language system” and how this definition shapes the way we view the brain’s organisation for language. I will provide evidence from various methodologies, across neurotypical and neurological populations, on the importance of the temporal lobe for conceptually driven spoken word production. This claim may be seen by some as going against a, perhaps by now outdated, view that the temporal lobe is for comprehension whereas the frontal lobe is for (speech) production. I will argue that part of this confusion stems from lumping together the memory-retrieval aspects and the motor aspects of producing language. I will also argue that, once the memory-retrieval aspects of word production are considered, drawing a strict line between comprehension and production becomes less straightforward, at least when studied with more naturalistic-like tasks.

Prediction, feedback, and learning in models of spoken language processing

James S. Magnuson^{1 2 3}

¹ BCBL: Basque Center on Cognition, Brain and Language, Donostia-San Sebastián

² IKERBASQUE: Basque Foundation for Science, Bilbao

³ University of Connecticut

A growing body of results supports the proposal that adaptive perception and action depend on prediction-based mechanisms. I will review such evidence in the domain of spoken language processing (focusing on lexical and sublexical levels), and discuss computational architectures that build in the premise of prediction and others where prediction emerges. For example, interactive activation models exhibit putative hallmarks of predictive coding, while also accounting for aspects of language processing that to date have not been simulated within explicitly predictive frameworks. I will also discuss how interactive and Bayesian frameworks can provide baselines to guide developmentally-plausible theories based on more complex recurrent architectures.

What is the bilingual brain?

Esti Blanco-Elorrieta ¹

¹New York University

Research on the neural bases of language processing has historically made a distinction between "standard" (read: monolingual) and bilingual language processing. However, do we have theoretical grounds to believe that bilingual minds are qualitatively distinct from monolingual ones? Is there empirical evidence to suggest that bilingual brains work on different principles? In this talk, I will combine i) theoretical argumentation with ii) empirical data from a series of studies that systematically address core questions about bilingual language use across a range of conversational contexts both in production and comprehension, to extend an invitation to the field to work towards a more cohesive and comprehensive theory of the neurobiology of language.

Language Control Requires Control

Victor Ferreira¹

¹UC San Diego

Bilingual speakers are remarkably adept at controlling the languages they speak. When they need to use just one language, they can do so without encroachment from their other language, but when speaking to another bilingual who knows the same languages, they easily switch back and forth between them. This seeming ease contradicts a large literature on language-switching, which suggests that costly application of inhibition is needed to maintain orderly language control. In this talk, I review evidence from in and out of our lab showing that language switching is costly and bears unmistakable signatures of inhibitory control. Even when switch tasks are made to resemble real-world switching more — by allowing switches to be voluntary, or by switching inside of sentences or passages — costs and signatures of inhibition remain. Switch costs can be eliminated, but under contrived circumstances that depart in essential ways from the way language is spoken in the real world. We conclude that language control requires control, and in particular, that different mechanisms work together to activate and inhibit linguistic representations so that bilinguals can speak the language they want to speak when they want to speak it.

SYMPOSIUM: The Bilingual Brain.
Theme Speaker: Esti Blanco-Elorrieta

[S-1.1]

Cross-dialectal influence on bilectal processing: Evidence from Norwegian ERPs

Jade Sandstedt ^{1,2}, Maki Kubota ¹, Merete Anderssen ¹, Jeannique Anne Darby ², Stig Helset ², Yanina Prystauka ¹, Jason Rothman ^{1,4}, Elahe Tavakol ² & Øystein Vangsnes ^{1,4}

¹ UiT - The Arctic University of Norway; ² Volda University College; ³ Western Norway University of Applied Sciences; ⁴ Nebrija University

This EEG study investigates gender and number agreement processing among bilectal Norwegian speakers in the written standard Bokmål (experiment 1) with participants from Sunnmøre (N=72) and Northern Norway (NNorw; N=53) – regions with dialects that are grammatically aligned and misaligned with Bokmål number agreement patterns, respectively (e.g., ‘the cars are nice-Ø/p!’: Bokmål ‘bilene er *fin/fin-e’, Sunnmøre dialects ‘bilane e *fin/fin-e’, NNorw dialects ‘bilan e fin/*fin-e’). Gender/number agreement processing was also tested in NNorw dialect writing (experiment 2) among NNorw (N=56) and Non-NNorw (N=49) dialect users, testing the extent NNorw dialect users display distinct processing patterns in Bokmål and NNorw. Results from experiment 1 (Bokmål) reveal that both dialect groups display expected P600 effects for gender agreement (control condition; all dialects are grammatically aligned) but show distinct processing patterns for number agreement, where NNorw participants display significantly attenuated P600 effects and increased acceptance of number non-agreement sentences (Bokmål ungrammatical, NNorw grammatical). In experiment 2 (NNorw dialect), NNorw participants display the reversed pattern: P600 effects for the presence of number agreement (obligatory in Bokmål, ungrammatical in NNorw). This suggests that bilectals operate with distinct (but interacting) grammatical representations: closely related varieties are processed differently at the brain level depending on dialect mode.

[S-1.2]

Neural mechanisms of extreme language control in bimodal bilinguals

Idil Gemici¹, Alexis Hervais-Adelman² & Rabia Ergin³

¹Yeditepe University, Istanbul

²University of Zürich, Zürich

³Independent researcher

Bilingual (or multilingual) language control allows for selecting and using the appropriate language depending on the communicative need. Regardless of language modality, both unimodal and bimodal bilinguals utilize language control. While research on bilingualism show that domain-general executive control plays a significant role in managing languages in the same-modality, further work is needed to elucidate the neural mechanisms used in bimodal bilingual language control. Here, we used functional magnetic resonance imaging (fMRI) with simultaneous interpreting (SI) as a form of extreme language control task to investigate the neural mechanisms of language control in early Turkish-Turkish Sign Language (TID) bimodal bilinguals (N = 20). We compared brain responses produced in SI with the responses arising from shadowing in two directions of interpretation. Our analyses show that there are overlapping activations in motor regions such as the precentral gyrus and insula for SH in Turkish and TID. However, we report distinct neural mechanisms employed in SI for two directions. While SI from Turkish to TID involves domain-general structures such as precentral gyrus and cerebellum, SI from TID to Turkish engages the posterior part of the superior temporal gyrus. Therefore, our findings provide new insights into the neural mechanisms of bimodal language control.

ORAL SESSIONS

[OS-1.1]

Development of a Language Localizer Task for Developmental Comparisons using Multi-Modal fMRI and fNIRS Imaging

Sara Sanchez-Alonso ¹, Isabel Nichoson ¹, Rebecca Canale ² & Richard Aslin ^{1 2}

¹Yale University

²University of Connecticut

A fronto-temporal language network engaged in language comprehension has long been characterized in the adult brain. Importantly, the structural and functional developmental changes that lead to the mature adult network remain understudied. Partly, this is due to the challenges of conducting longitudinal fMRI studies with pediatric samples. We report two studies aimed at assessing the feasibility of implementing functional near-infrared spectroscopy (fNIRS) to probe the language system as a complementary alternative to fMRI. First, we validate a naturalistic child-friendly paradigm with 42 young adults using fNIRS. This paradigm contrasts movie-watching responses to a soundtrack consisting of natural speech vs. distorted (time-reversed) speech. Listening to speech elicits stronger responses in canonical language areas than time-reversed speech. Second, we present fMRI and fNIRS data collected simultaneously from 40 young adults using a previously validated fMRI language 'localizer' task. A quantitative comparison of the fNIRS and fMRI signals establishes the language network common to these two neuroimaging modalities. We then compare the fMRI-informed fNIRS network with the fNIRS network obtained with the child-friendly paradigm. Collectively, these data aim to validate fNIRS as a readily accessible and cost-effective tool for future developmental studies of the language network in infants and young children.

Statistical and Syntactic Information Facilitate Verb Learning by Resolving Ambiguity in Different Ways

Yayun Zhang¹, Jing Wang², Ping Li² & Chen Yu³

¹Max Planck Institute for Psycholinguistics

²The Hong Kong Polytechnic University

³University of Texas at Austin

Successful learning of meanings requires children to solve two challenges upon hearing an unfamiliar word: 1) to determine what concept is referred to in speech (referential ambiguity) as there are usually many candidate referents present and only one of them is to which the speaker intends to refer at the moment; 2) to find the right label as many words can be used to refer to the same referent (semantic ambiguity). Using the well-established Human Simulation Paradigm, we designed four experiments to quantify the degrees to which the two types of ambiguities exist in naturalistic parent-child toy play and to examine how statistical and syntactic cues independently and jointly facilitate verb learning. We found that 1)referential and semantic ambiguities are prevalent in the real-world learning environment; 2)statistical information allows learners to resolve referential ambiguity by extracting common event features embedded across multiple trials and eventually converging on the correct referent unit; 3)syntactic cues allows learners to quickly narrow down their search space by filtering out verbs (with or without similar meanings) that do not fit the given syntactic frame, resolving both referential and semantic ambiguities. Both sources of information mutually support verb learning and allow for complex bootstrapping operations in child language development.

Does ChatGPT resemble humans in language use?

Zhenguang Cai¹, David Haslett¹, Xufeng Duan¹, Shuqi Wang¹ & Martin Pickering²

¹The Chinese University of Hong Kong

²University of Edinburgh

Large language models (LLMs) have shown remarkable capacities in comprehending and producing language. However, it is unclear whether LLMs can develop humanlike characteristics in language use. We subjected ChatGPT to 12 of psycholinguistic experiments, pre-registered and with 1,000 runs per experiment. In 10 of them, ChatGPT replicated the human pattern of language use. It associated unfamiliar words with different meanings depending on their forms, continued to access recently encountered meanings of ambiguous words, reused recent sentence structures, reinterpreted implausible sentences that were likely to have been corrupted by noise, glossed over errors, drew reasonable inferences, associated causality with different discourse entities according to verb semantics, and accessed different meanings and retrieved different words depending on the identity of its interlocutor. However, unlike humans, it did not prefer using shorter words to convey less informative content and it did not use context to disambiguate syntactic ambiguities. We discuss how these convergences and divergences may occur in the transformer architecture. Overall, these experiments demonstrate that ChatGPT is capable of mimicking human language processing to a great extent, and that they have the potential to provide insights into how people learn and use language.

A simple, integrated model of eye-movement control and dependency completion during reading

Garrett Smith¹, Maximilian Rabe¹, Shравan Vasishth¹ & Ralf Engbert¹

¹University of Potsdam

Eye-movement control during reading is a complex motor control problem. Which words the eyes target and how long they fixate them depends not only on low-level properties like word frequency and distance from the currently fixated word, but also on the higher-level linguistic structure that emerges while reading a sentence. Currently, we have successful computational models of low-level eye-movement control (SWIFT; Rabe et al. 2021, Psych. Rev.) and online dependency completion (based on cue-based memory retrieval; Vasishth et al., 2019, TiCS), but up to now, there have been few models that implement the interplay of low- and high-level processing in eye-tracking while reading. Here, we present an integrated model based on simplified versions of SWIFT and cue-based retrieval for dependency completion; the simplification makes parameter estimation tractable even on an ordinary laptop. In this model, the eye-movement control and dependency completion modules act on shared word activations that affect how long and with what probability words are fixated. We show that the model can be fit to human fixation sequences using Bayesian parameter estimation. This simplified, integrated model can serve as a basis for future modeling of eye-movements during reading and how they are affected by linguistic processing.

Error propagation explains event-related potentials in second-language learning

Stephan Verwijmeren¹, Stefan Frank¹, Hartmut Fitz¹ & Yung Han Khoe¹

¹Radboud University

In sentence comprehension by low-proficiency second-language (L2) learners, syntactic violations give rise to an N400 event-related potential (ERP) effect. With increasing proficiency, this changes into a P600 effect. However, the precise functional interpretation of ERPs remains a matter of debate. Fitz & Chang (2019) proposed a theory where ERPs reflect learning signals that arise from mismatches in predictive processing. These signals are propagated across the language system to make future predictions more accurate. We test if this ‘error-propagation’-theory can account for the N400-to-P600 switch in late bilinguals, by implementing a neural network model capable of simulating ERPs. This model is the Bilingual Dual-path model (Tsoukala et al., 2021), a bilingual extension of the (monolingual) Dual-path model (Chang, 2002) of syntactic development. We perform an experiment designed to elicit ERP effects in simulated L2 learners. Simulated Spanish-English participants showed similar ERP effects in response to syntactic violations in their L2 (English) as human participants did in ERP studies. Over the course of L2 learning, simulated N400 size decreased while P600 size increased, as it does in humans. Our findings support the viability of error propagation as an account of ERP effects, and of how these change over L2 learning.

Hebbian Neural Networks for Statistical Learning

Angel Eugenio Tovar¹

¹Universidad Nacional Autonoma de Mexico

Theoretical accounts of statistical learning suggest that language can be acquired through experience in organisms capable of computing the complex regularities found in language sequences, grammar, syntax, etc. Three main paradigms have been used to evaluate statistical learning abilities: Serial Reaction Time, Word Segmentation, and Artificial Grammar Learning. However, debate still exists about the mechanisms responsible of statistical learning and their variability in atypical populations. I present two neural network models. The first one is a single-layer artificial neural network that instantiates forms of Hebbian and anti-Hebbian learning that capture neurophysiological processes of synaptic modification. This model is able to simulate the main results found in the three experimental paradigms of statistical learning in typical and atypical populations, and it captures the relevant statistics of environmental input in its connection weight matrix. A second model extends the previous one by including an additional layer that acts as a hippocampal module. Through this extension the second model is able to process even more complex statistical regularities, as it adequately processes overlapping statistics for which the single-layer model is limited. Both architectures demonstrate that complex statistical regularities, as those found in language, can be processed by relatively simple domain-general learning mechanisms.

[OS-3.1]

Do Language Models learn the specificity of parasitic gaps?

Adèle Hénot-Mortier ¹

¹Massachusetts Institute of Technology

Parasitic gaps (PGs) are licensed by another gap, and typically occur in islands for extraction like adjunct clauses (“What did you discard [gap] after using [PG]?”). Do language models (LMs) “understand” this specificity? We first assess if 4 LMs (GPT-2, XLNet, BERT, RoBERTa) identify island effects in semi-automatically generated pairs of sentences like “What did you V1 it1 without V2-ing it2?” containing either “it1” (island-violating) or “it2” (well-formed); and where V1 and V2 are strongly transitive. $\frac{3}{4}$ models (GPT-2, BERT, RoBERTa) associated island-violating sentences to higher surprisal scores, with overall large effect sizes (Cliff’s delta > .55). Those 3 LMs were further tested on pairs like “What did you V1 it without V2-ing?”, “it” being present (island-violating sentence) or absent (PG-sentence). V1 and V2 were chosen to make sense together in a PG-structure. BERT and RoBERTa associated island-violating sentences to higher surprisal scores with medium effect sizes (> .47). GPT-2 exhibited a significant contrast, but the effect size remained negligible. This suggests bidirectional LMs perform better than Incremental ones in identifying complex filler-gap dependencies like PGs. Testing other properties of PGs (e.g., their optionality/obligatoriness when they follow/precede the gap) may help confirm that LMs distinguish them from plain gaps.

Megastudy evidence for processing cost differences in plural allomorph production

Jane Li¹ & ColiIn Wilson¹

¹Johns Hopkins University

In a previous series of speeded inflection experiments, we found robust differences in word onset latency across the three regular English plural allomorphs ([N-s] < [N-z] < [N-iz]). Here we provide converging evidence for the same pattern from speeded word naming trials of the English Lexicon Project (Balota et al. 2007). Our first analysis focused only on nouns that had appeared in our experiments. A linear mixed-effects model of log-transformed onset latencies showed a significant effect of allomorph in the expected direction on the production of plural forms ($p([s]) = 0.005$, $p([iz]) < 0.001$), but not on the production of uninflected stems ($p([s]) = 0.198$, $p([iz]) = 0.190$); these experimental items were controlled for frequency, phonological complexity, and length. As one of the main strengths of megastudies is the ability to sample the lexicon broadly, we performed a second analysis that included a wide range of monomorphemic nouns ($n = 2344$, 130k+ trials) with varying frequencies and lengths. We found equivalent allomorph effects in the production of plural forms ($p([s]) = 0.002$, $p([iz]) < 0.001$). The generality of these results across speeded inflection and naming suggest that the allomorph effects are specific to the phonological encoding of the allomorphs.

Frequency attenuation effects in masked repetition priming: a large-scale online study

Roberto Petrosino¹ & Diogo Almeida¹

¹New York University Abu Dhabi

Masked priming is often thought to reflect the first automatic stages of lexical access: it arises only with words, with no apparent frequency attenuation (e.g., Forster and Davis, 1984). Nonetheless, frequency attenuation effects have been reported (e.g., Bodner & Masson, 2001), suggesting that strategic effects may arise under masked priming conditions and that previous studies may have been underpowered to detect medium/small interaction effects of frequency and repetition. We ran an online masked repetition priming study with 2,600 English speakers, which power simulations indicated would ensure 97% chances to detect a medium-size interaction effect. The reliability of a novel online stimulus presentation program (Labvanced) was assessed in a preliminary experiment with N=299. Both experiments used a 2x2 design (Frequency: low vs high; PrimeType: repeated vs unrelated) in a typical masked repetition priming design. The SOA was set to 33 ms. Large effects of relatedness and frequency were observed. Crucially, the interaction was also detected: low-frequency repetition priming was twice as large as high-frequency priming. These results suggest that the mechanisms of masked priming do not operate exclusively at the first automatic stages of lexical access, and that effects associated with strategic processing can be detected under masked priming conditions.

Activation of ASL signs during sentence reading for deaf readers: evidence from eye-tracking

Emily Saunders^{1,2}, Jonathan Mirault³ & Karen Emmorey¹

¹San Diego State University

²University of California, San Diego

³Aix-Marseille Université

Bilinguals activate both of their languages as they process written words, regardless of modality (spoken or signed). These cross-language effects have primarily been documented in single word reading paradigms, but may also be present in sentence reading contexts. To address this, we used eye-tracking to determine whether deaf bilingual readers ($n = 23$) activate American Sign Language (ASL) translations as they read English sentences. Sentences contained a target word and one of two possible prime words: a related prime which shared phonological parameters (location, handshape, or movement) with the target when translated into ASL or an unrelated prime. Results revealed that first fixation durations and gaze durations (early processing measures) were shorter when target words were preceded by ASL-related primes, but prime condition did not impact later processing measures (e.g., regressions). Participants were unaware of the manipulation, suggesting co-activation effects reflect automatic spreading activation, not overt translation. Reading skill was negatively correlated with the size of the ASL co-activation effect, consistent with models proposing stronger links to L1 for less proficient bilinguals. Together, the results indicate that co-activation of ASL phonology impacts early lexical access of written English and can facilitate word reading, particularly for less-skilled deaf readers.

L2 difficulties in the perception of tones: Phonological universals or domain-general aptitude?

Chao Zhou¹ & João Veríssimo¹

¹University of Lisbon

Acquiring Mandarin lexical tones poses a great challenge to L2 learners without tonal language experience. Some phonological universals also seem to be at play: Zhang (2016) reported that learners avoid producing identical lexical tones on adjacent syllables (Obligatory Contour Principle; OCP), especially for rising (T2) and falling (T4) tones (Tonal Markedness Scale; TMS; T2>>T4>>T1). Based on the Revised Speech Learning Model (Flege & Bohn 2021), we examined: (a) whether these phonological universals likewise shape tonal perception, and (b) whether individual differences in L2 proficiency and domain-general pitch discrimination predicts tonal acquisition. We tested 59 L1-Portuguese learners of Mandarin on a tone identification task with disyllabic pseudowords with identical vs. non-identical sequences. Bayesian mixed-effects models revealed that learners were equally accurate in the two conditions, and thus no evidence suggests that the OCP was at play. Accuracy was lower for T2 (consistent with the TMS), but learners were equally accurate for T4 and T1 (against the TMS). Individual difference analyses showed that accuracy in tone identification was predicted by aptitude in pitch discrimination, but not by L2 proficiency. Our results suggest that L2 tonal perception is less shaped by phonological universals than L2 production, instead depending more on domain-general perceptual abilities.

Predictive processing during novel word learning: ERP measures of vowel harmony

Berrak Muftuoglu ¹ & Alba Tuninetti ²

¹ Bilkent University

² University of Colorado Boulder

This project examined the effect of an intra-lexical phonological construct (Turkish vowel harmony; TVH) on the acquisition of multi-syllabic pseudowords by Turkish-English bilinguals in a cross-situational word learning paradigm. During training, participants were presented with novel pseudowords, both harmonious and disharmonious for TVH, with multiple referent pictures. Learning was measured by a recognition test and a semantic judgment task (SJT). In the recognition test, participants heard a pseudoword and were asked to select the correct referent for it. In the SJT, participants were presented with either a learned pseudoword or a real Turkish word, then with another real Turkish word. Their task was to indicate whether the two presented words were from the same semantic category. The recognition test results showed high accuracy, implying successful learning, with no differences among TVH conditions. The SJT results were modulated by both the novelty of the words (pseudowords vs. real words) and the harmony conditions in both behavioral and ERP measures. Specifically, harmonious words lead to N400 responses similar to real words, with no such effect on the disharmonious words. These results suggest that the phonological rules of participants' native language had an impact on semantic consolidation.

Language dominance and code-switching shape vowel production in Basque-Spanish bilinguals

Peng Li¹, Clara Martin^{2,3} & Natalia Kartushina¹

¹University of Oslo

²Basque Center on Cognition, Brain, and Language

³Ikerbasque, Basque Foundation for Science

This study investigates how Basque-Spanish bilinguals produce vowels in Basque and Spanish to provide novel evidence on phonetic level beyond phonological level for bilingual research since phonologically, both languages have a five-vowel (/a, e, i, o, u/) system. We hypothesized that the distinctiveness of vowels and the differences in vowel spaces between Spanish and Basque would be predicted by speakers' language dominance and code-switching habits. Thirty-eight Basque-Spanish early bilinguals read, five times, five Basque and five Spanish words, each containing one target vowel. The vowels were manually annotated and acoustically analyzed. Vowel distinctiveness was measured by Pillai scores of the same vowel in the two languages, while the vowel space, for each language, was assessed by the convex hull area. For vowel distinctiveness, highly Basque-dominant speakers who switch less maintained distinctions the best. For vowel space, less frequent switchers showed larger differences in the hull areas between Spanish and Basque, regardless of the language dominance. In conclusion, this study provided new phonetic data on vowel production by bilingual speakers whose native languages share the same vocalic system at the phonological level, showing that code-switching habits and language dominance play an important role in partitioning bilingual speakers' two native languages.

Memory retrieval and illusion of grammaticality in garden-path reanalysis

Yang Fan¹ & E. Matthew Husband¹

¹University of Oxford

Garden-path sentences lead comprehenders to initial structural commitments that require reanalysis, a process that likely involves memory retrieval of prior constituents. Retrieval is generally thought to be cue-based and noisy, finding constituents that, at times, only partially match retrieval cues and producing illusions of grammaticality. We hypothesized that illusions might also be found in garden-path reanalysis, where retrieval of a partially matching but irrelevant constituent leads the parser to believe that reanalysis is on track, even though the irrelevant constituent retrieved ultimately cannot repair the structure. This predicts illusions of grammaticality in garden-paths compared to their controls. A 2x3 self-paced reading experiment (N=180, Item=36) investigated this prediction, manipulating agreement with the disambiguating verb (grammatical [sg, pl], illusory [pl, sg], ungrammatical [sg, sg]) and NP/Z structure (garden-path, control), e.g. 'After the attendant(s) polished(,) the oak table(s) which had been damaged were used to serve lunch.' After disambiguation, illusory agreement tracked grammatical agreement in garden-paths, but ungrammatical agreement in controls, suggesting that even partially matching but irrelevant NPs deceive the parser into believing it has retrieved the relevant constituent. These results suggest that the garden-path reanalysis relies on noisy cue-based memory retrieval, and may be misled by partially matching cues during reanalysis.

Processing agreement morphology indexing more than one feature activates both features independently: Evidence from Polish VWP

Zuzanna Fuchs¹

¹University of Southern California

This study investigates how noun category information is processed during language comprehension when a portmanteau morpheme realizes agreement in more than one noun-category feature – in this case, grammatical gender and animacy. In Polish, masculine nouns determine different agreement morphology in the accusative singular depending on whether the head noun is animate (adjectival suffix *-ego*) or inanimate (adjectival suffix *-y*). In a study on facilitative use of agreement marking in the Visual World Paradigm incorporating the Covered Box Paradigm, results show that when participants encounter a prenominal adjective inflected for accusative masculine animate (ex. *zielon-ego*), looks to the masculine animate target are reduced in the presence of competitors that are partial feature matches: feminine animate or masculine inanimate. Similarly, when participants encounter a prenominal adjective inflected for accusative masculine inanimate (ex. *zielon-y*), looks to the masculine inanimate target are reduced in the presence of a feminine inanimate competitor. This indicates that the Polish mental lexicon consists of both abstract gender category nodes and semantic animacy category nodes. Moreover, the results suggest that, during language comprehension, encountering portmanteau morphology that indexes agreement in both features independently activates these gender and animacy category nodes, spreading pre-activation to all connected lexical items.

The role of goal in sentence processing

Anna Laurinavichyute ¹, Himanshu Yadav ¹, Titus von der Malsburg ² & Shravan Vasishth ¹

¹ University of Potsdam

² University of Stuttgart

The role of goal has largely been ignored in sentence processing research, presumably because (morpho-)syntactic processing is assumed to be invariant to goal, which is not necessarily true. In a series of four single-trial self-paced reading experiments manipulating task and sentence grammaticality, we show that: 1) in grammatical sentences like 1a and 1b, no effect is observed at the verb when participants expect to answer comprehension questions, but a slowdown in condition 1b (attraction effect) arises when participants expect to judge acceptability; 2) in ungrammatical sentences like 1c and 1d, agreement attraction (speedup at the verb+1 in 1d) is present irrespective of the task, but the effect changes direction at the verb+2 when participants expect to judge sentence acceptability. Typically-observed reading time effects (attraction in 1c vs. 1d, no effect in 1a vs. 1b) occur when the goal is answering comprehension questions but disappear when the goal is acceptability judgment. Instead, judgment-typical effects appear. Overall, agreement attraction demonstrates a surprising degree of task-dependency.

- 1.(a) The candidate that the lobbyist openly supports ...
- (b) The candidates that the lobbyist openly supports...
- (c) The candidate that the lobbyist openly *support ...
- (d) The candidates that the lobbyist openly *support ...

Tracking the prosodic hierarchy in the brain - cortical entrainment in German listeners

Chantal Oderbolz^{1,2}, Sebastian Sauppe^{1,2} & Martin Meyer^{1,2}

¹Department of Comparative Language Science, University of Zurich, Zurich, Switzerland

²Center for the Interdisciplinary Study of Language Evolution, University of Zurich, Zurich, Switzerland

The speech signal carries hierarchically organized acoustic and linguistic information. Recent theoretical accounts posit a decisive role for cortical oscillations in explaining how the brain deals with this complexity. Within these accounts, especially temporal modulations at the syllable rate and corresponding theta oscillations are spotlighted. However, the speech signal also contains slower modulations associated with stress and the intonation contour. Phonological theories capture the relationships between these features in a prosodic hierarchy. However, it remains unclear whether and how the prosodic hierarchy is concurrently represented by the brain through cortical oscillations and the behavioral relevance thereof. In an EEG study, 30 adults listened to German sentences with manipulations at different levels of the prosodic hierarchy (regular/irregular rhythm, normal/flattened intonation). We evaluated cortical entrainment and behavior, analyzing pairwise phase coherence and performance on a syllable identification task. We found that the brain concurrently entrains to multiple levels of the prosodic hierarchy. Manipulations of the prosodic structure influenced the brain's ability to entrain to the syllable- and intonation-level with entrainment magnitude showing evidence for both acoustic and linguistic processing. We also found systematic inter-individual differences in the extent to which participants were impacted by these manipulations at neural and behavioral levels.

How informative do we need to be? Asymmetrical effects of informativity in affirmative and negative sentences

Muxuan He¹ & Elsi Kaiser¹

¹University of Southern California

Theories of pragmatics (e.g., Grice 1975) and language processing (e.g., UID, Levy/Jaeger'07) predict that there exists an ideal level of informativity that is cognitively and communicatively desirable. While many studies demonstrate that, in affirmative sentences, comprehenders prefer LOW surprisal/informativity over high surprisal/informativity, a bias towards HIGHER informativity has been seen in negative sentences (Nieuwland/Kuperberg'08). We test further how sentence polarity (affirmative/negative) affects comprehenders' preference for informativity. Our English self-paced reading study (n=54) crossed (a) sentence polarity (affirmative/negative, e.g., '...the house has/doesn't have a bathroom') and (b) the critical noun's likelihood level (part-whole relation; high/medium/low, e.g., likelihood of a house having a bathroom/garage/ballroom; normed beforehand). Results show that (1) affirmative sentences favor medium ('just-right') informativity: The medium-likelihood condition was read faster than high- and low-likelihood conditions at the critical noun ($p < 0.05$), and (2) negative sentences favor high informativity: Negating high-likelihood information yielded fastest RTs at the critical noun ($p < 0.05$). Our findings suggest that what's easy to process in affirmative sentences is not as easy in negative sentences and vice versa. This helps to account for the long-standing asymmetry between negation and non-negation processing (e.g., Tian/Brehehy'19), and provides a necessary foundation for investigating why negation favors higher informativity.

Predictability effect in L2 reading: eye-tracking data

Svetlana Alexeeva¹, Daria Chernova¹, Marina Norkina^{1,2} & Maria Kharchevnik¹

¹Saint Petersburg University

²Sirius University of Science and Technology

Data on the role of predictability in L2 reading are contradictory: the question is whether linguistic exposure in L2 is enough to have expectations on the following word (Martin et al. 2013, Whitford&Titone 2017). We investigate the role of word predictability in oculomotor behaviour of Chinese-speaking learners of Russian. Two groups of 40 L2 learners (level A2-B1) and 40 native speakers read 90 sentences of the Sentence corpus for L2 learners of Russian (Norkina et al. 2022), predictability of each word was pre-tested in a cloze task. EyeLink 1000+ was used to record their eye movements. We analyzed first-pass time as an early measure and regression rate as a late measure. As for the first-pass time, we found predictability effect for both L1 and L2 readers, and in L2 it is more pronounced. As for the regression rate, we found a significant effect of word predictability in both groups and a significant interaction between the group and the predictability level: low-predictable words are especially difficult for L2 learners. Thus, we show the predictability effect in early and late eye-movement measures both in L1 and intermediate-level L2 readers.

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Memory for Emotional Words in a Recognition Task

Emilia Ezrina^{1 2} & Virginia Valian^{2 1}

¹The City University of New York, The Graduate Center

²The City University of New York, Hunter College

Bilinguals' language representation of emotional words is different from that of monolinguals, and between L1 and L2. Strength of associative connections between words could vary depending on language status. Does emotional language affect recognition memory differently in mono- and bilinguals? Monolingual, English-dominant, and non-English-dominant participants were presented with two lists consisting of emotional and neutral words in English (25% positive, 25% negative, and 50% neutral). The first list (encoding task) consisted of novel words, while the second list (recognition task) consists of 50% novel words and 50% words from list 1. We calculated discriminability (d') and response bias (β) for each word type (positive, negative, and neutral). We hypothesized that these would differ for emotional and neutral words and each language group. Mixed effects models showed no differences in discriminability irrespective of language group or word type. Bias was significantly more liberal for emotional words, meaning that participants falsely recognized novel emotional words as previously seen. Bias did not significantly differ across language groups. High L2 proficiency could explain a similar memory effect for emotional words. Another explanation may be a special memory status of emotional words, wherein their activation threshold could be lower, not requiring high L2 proficiency.

Structural convergence is mediated by perceived linguistic and social proximity

Christina S. Kim¹ & Gloria Chamorro²

¹University of Kent

²Universidad Nacional de Educación a Distancia

Adaptation at the sentential level is often seen as a form of priming, driven by low-level cognitive mechanisms (Chang et al., 2000). However, recent work shows structural convergence is sensitive to speakers' perceptions of their interlocutor's characteristics (e.g. native-speaker status, perception of socio-cultural proximity). This study uses structural priming as a measure of listeners' convergence with their interlocutor to address: whether these characteristics have independent effects on structural convergence, and whether convergence over the course of an experimental session can shift speakers' perceptions about their proximity to their interlocutors. Participants played a picture-matching game involving taking turns with a confederate to describe scenes depicting ditransitive events ("Ann showed Mia ___") using the verb provided. Half of the verbs were acceptable in either double object (DO) or prepositional dative (PD) form, while the other half resulted in anomalous sentences when used in the DO form ("Ann described Mia ___"). Results revealed that anomalous DO sentences using strongly PD-biased verbs were judged as less ill-formed when produced by a confederate who was perceived as more native-like, closer geographically, or having more similar interests, suggesting these characteristics mediate convergence. In addition, convergence during the session shifted participants' judgments about their interlocutors' social proximity.

**How pronominal information contributes to efficient communication in
Czech noun phrases**

Jan Chromý¹, James Brand¹ & Michael Ramscar²

¹Charles University

²University of Tübingen

Nouns are the least predictable part of speech. We examined whether Czech speakers' optional use of pronominal modifiers (Czech has no articles) helps to facilitate efficient noun communication. In a spoken production experiment (N=153), participants saw arrays of three objects (32 experimental, 48 fillers) and completed a "Point at..." sentence referring to a highlighted target object. Three variables were manipulated: (i) color typicality: arbitrary (T-shirt) vs. typical (banana); (ii) color informativeness: informative (all objects had different colors) vs. uninformative (their colors were identical); (iii) grammatical gender informativeness: informative (the target's gender differed from the other objects) vs. uninformative (all objects shared the same gender). Speakers' production of two pronominal modifiers, definite pronouns and color adjectives (which are marked for gender in Czech), were measured: Logit mixed model analyses revealed that significantly more pronouns were used when gender was informative, while color adjectives were used more with color arbitrary items and when color was informative; finally, a three-way interaction between color typicality, color informativeness and gender informativeness was observed. Taken together, our results indicate that Czech speakers do appear to use optional pronominal modifiers to reduce the uncertainty associated with nouns, illuminating the role of these modifiers in efficient communication.

Ranking animacy and discourse status as determinants of pronoun use

Markus Bader¹ & Yvonne Portele¹

¹Goethe University Frankfurt

In contrast to research on sentence production, research on the production of referential expressions has rarely taken animacy into account. Instead, the choice of referential expressions, in particular the choice of pronouns, is considered a matter of discourse status, as captured in various accessibility hierarchies. We present results from picture description experiments challenging this view. German-speaking participants described pictures depicting an animate agent and an inanimate patient. Each picture was preceded by a written context consisting of a headline and three sentences. The main factor investigated was discourse salience: either agent or patient of the depicted event was established as discourse topic in the context. Results show that pronoun rates are always higher for animate agents than for inanimate patients, independently of which referent was the discourse topic and thus discourse salient, although salience also had some minor effects on pronominalization. In a parallel experiment, the depicted agent and patient were both animate. In this experiment, participants produced more pronouns for the discourse topic. Taken together, our results show that animacy and discourse salience jointly determine the choice of pronouns, with animacy being higher ranked than discourse salience. Further results concern argument order and use of demonstratives.

Does informativity modulate linearization preferences in reference production?

Muqing Li¹, Noortje J. Venhuizen^{2,1}, Torsten Kai Jachmann¹, Heiner Drenhaus¹ & Matthew W. Crocker¹

¹Language Science and Technology, Saarland University

²Department of Cognitive Science and Artificial Intelligence, Tilburg University

During referential communication, speaker's choices regarding the syntactic encoding of their expressions can modulate the linear ordering of the properties necessary to identify the referent. In two web-based experiments, we examined whether such syntactic choices are influenced by the informativity of these properties in a given visual context, as quantified by Referential Entropy Reduction (RER), measuring the amount of uncertainty that a word can reduce for picking out the referent in a visual scene. If a word reduces more uncertainty, it obtains high RER and is more informative. A maze-based sentence completion task was used to examine whether informativity of a particular property (animal or action) can influence the decision to produce pre- versus post-nominal modifications when describing animal-performing-action referents in a visual scene (e.g., "the crying rabbit" vs. "the rabbit that's crying", tested in German). While half of the participants used a fixed strategy of adopting pre-nominal modifications, informativity did significantly influence linearization choices for the remaining participants, consistent with a maximal informativity strategy in which more informative words are more likely to be encoded early. This result shows that informativity can modulate meaning-equivalent encoding choices in referential production, resulting in different linearization preferences.

Distributed Neural Representations for Semantic Structures During Sentence Production

Laura Giglio^{1,2}, Peter Hagoort^{1,2} & Markus Ostarek¹

¹Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands

²Donders Institute for Brain, Cognition and Behaviour, Nijmegen, The Netherlands

The neural representations for compositional processing have so far been mostly studied during sentence comprehension. In an fMRI study of sentence production (n=38), we investigated the brain representations for compositional processing during speaking. We used a rapid serial visual presentation sentence recall paradigm to elicit sentence production from the conceptual memory of an event. With voxel-wise encoding models, we probed the specificity of the conceptual structure built during the production of each sentence. We compared an unstructured model of word meaning without relational information ('bag-of-nouns') with a model that encodes abstract thematic relations ('man-as-agent') and a model encoding event-specific relational structure ('man-as-hitter'). ROI analyses in the superior temporal cortex (STC) indicated that verb-specific event representations were encoded in the mid-anterior STC. The posterior STC instead encoded sentence meaning abstracting over events, as well as the ordinal and syntactic structure of the sentence. Whole-brain analyses revealed that the encoding of sentence meaning at different levels of specificity was by no means limited to the STC and instead highlighted a large left fronto-parieto-temporal network. Overall, we found evidence for the encoding of specific as well as abstract semantic structures during sentence production in distributed brain representations.

A noisy-channel explanation of the comparative illusion

Yuhan Zhang¹, Carina Kauf² & Edward Gibson²

¹Harvard University

²Massachusetts Institute of Technology

The comparative illusion sentence, “More students have been to Russia than I have”, is acceptable on first reading, but upon closer examination, its meaning becomes hard to discern. Previous research has identified several factors that affect the illusion degree -- the repeatability of the action (“go to Russia” vs. “escape from Russia”), the than-clause subject form (pronoun “I” vs. noun phrase “the teacher”), and the subject number (singular vs. plural) (O’Connor, 2015; Wellwood et al. 2018), but there has not been a thorough explanation of how the illusion arises. We propose a noisy-channel explanation (Gibson et al. 2013; Levy, 2008) and argue that readers could arrive at any of three possible interpretations (event comparison, event negation, individual comparison) depending on (1) the structural distance between the perceived anomalous sentence and the alternative which carries the interpretation and (2) the plausibility of the associated interpretation. Through a series of experiments, we show that, given equal plausibility of the possible interpretations, participants are more likely to choose the interpretation associated with the structure that necessitates the fewest and more probable edits. This study provides another linguistic phenomenon supporting the rational aspect of human language processing.

Individual differences in predictive processing in a verb-final language

Himanshu Yadav¹ & Samar Husain²

¹ University of Potsdam

² Indian Institute of Technology Delhi

In verb-final languages, when the distance between the verb and its arguments is increased, a speedup is observed in reading times at the verb. This effect ---called the anti-locality effect--- has been attributed to robust prediction of the upcoming verb in these languages. Do all the individuals in a verb-final language population use the prediction strategy reliably? A possible hypothesis is that some individuals are more sensitive to working-memory constraints than others and consequently, may show subdued anti-locality effects. In a series of four reading experiments on Hindi sentences like (1), we find a consistent anti-locality effect at the relative clause verb. As per individual-level estimates obtained using a Bayesian hierarchical model, most participants do show the anti-locality effect. However, there are a proportion of participants (~20%) in each experiment who do not show the anti-locality effect. The results suggest that most, but not all, Hindi speakers use the prediction strategy reliably. These results add to recent findings that while predictive processing is widespread in verb-final languages, working-memory constraints also play an important role in comprehension.

(1) ek ladki, [jo mumbai-me kai salon-tak mehnat-se infosys-me kaam kar
rahi-thii]

a girl [who Mumbai-loc for years diligently Infosys-lo work do Prog-
Past]

The time course of sentence planning in English

Jeonghwa Cho¹ & Julie Boland¹

¹University of Michigan

Researchers have proposed that English speakers formulate sentences based on the verb lemma (Bock and Levelt, 1994; Antón-Méndez, 2020). We examine the time course of sentence planning in English. 35 English speakers produced 24 transitive sentences and 24 unergative sentences. In each trial, three images representing a subject, a verb, and an object (transitive) or a location (unergative) were presented in six different orders (ISI = 250ms), as sentence production stimuli. Sentence onset latencies were faster when subject images were presented before verb images ($B = 0.05$, $p < 0.001$) and object/location images ($B = 0.03$, $p = 0.002$). Before speech onset participants fixated subjects the most for both sentence types, but the difference between looks to subjects and verbs was smaller in transitive sentences than unergative sentences ($p < 0.011$) when objects were presented last. The results suggest that when the argument role of the subject is held consistent, English speakers do not wait until the verb but start sentence planning upon the availability of the first element to be produced (i.e., subject). Yet they also process the argument structure of the whole sentence during planning, as indicated by increased looks to transitive verbs anticipating the internal argument.

POSTER SESSION I

[PS-1.1]

Grammatical gender agreement in bilingual code-switching: Representational and processing considerations

Mandy Cartner¹, Aya Meltzer-Asscher¹ & Julia Horvath¹

¹Tel Aviv University

This study explores the representation of language-specific agreement features in bilingual grammar and their behavior under intra-sentential code-switching (ICS). In a speeded forced choice task, 48 early Hebrew-English bilinguals read preambles containing an English inanimate noun (non-gendered), for which they chose an agreeing element in Hebrew. In 24 sets, we manipulated: the Gender of the English noun's Hebrew equivalent (F or M), and the Type of Agreement Dependency (all caps originally Hebrew): (1) Noun-Adjective concord: I used a {tomato_(F)|carrot_(M)} SLIGHTLY MUSHY._[F/M] (note: Hebrew adjectives are post-nominal) Subject-Predicate: The roasted {tomato_(F)|carrot_(M)} NOT.YET SOFTENED._[F/M] (note: the Hebrew copula is optional) Noun-Pronoun: I picked a fresh {tomato_(F)|carrot_(M)} AND-ATE IT._[F/M] We found evidence for (a) Analogical agreement: more feminine completions for English nouns that are feminine in Hebrew (63%), compared to nouns that are masculine in Hebrew (0.6%), $p < .001$; (b) More analogical agreement with pronouns (68%) than with adjectives (59%), interaction: $p = .001$; more default masculine agreement with the latter. We argue that analogical agreement in ICS provides evidence for shared abstract lexical representations in bilinguals' grammar. Using masculine default for feminine-in-Hebrew English nouns results from retrieval difficulty, which is larger in the local, feature-driven, noun-adjective agreement mechanism compared to (non-local) noun-pronoun coreference relations.

Enhanced reading skills are associated with auditory spatial attentional rebalance induced by the exposure to dual-language contexts

Marie Lallier ^{1,2}, Jose Perez-Navarro ¹ & Mikhail Ordin ³

¹ Basque Center on Cognition Brain and Language

² Ikerbasque Basque, Basque Foundation for Science

³ Abteilung der Sprachwissenschaft, Universität Konstanz

Research on the effects on early bilingualism on reading development is scarce. Here, we tackle this timely question by investigating whether the exposure to dual-language contexts (use of two languages in the same conversational situation) induces a boost in phonological and reading performance through more balanced spatial auditory attentional skills. Thirty Grade 1 early bilingual children predominantly exposed to dual-language contexts and 30 matched bilinguals predominantly exposed to single-language contexts were assessed on a dichotic listening task: syllables were simultaneously presented to the left and right ears and children were instructed to report the syllable they heard best. The dual-language contexts group demonstrated a reduced right ear advantage than the single-language contexts group, suggesting a more balanced report of syllables across ears in the former group. Moreover, more balanced reports were associated with more efficient reading skills. These results suggest that the frequent exposure to dual-language contexts possibly triggers the spatial rebalance of attentional resources for speech processing, impacting positively the development of reading skills. Future studies will determine whether some bilingual experience might act as a protective factor to reduce the prevalence and severity of future reading impairments such as dyslexia.

The Role of Linguistic Factors in the Retention of Verbatim Information: An Eye-Tracking Study on Reading in L1 and L2 German

Andreas Opitz¹, Denisa Bordag¹ & Alberto Furgoni¹

¹Universität Leipzig

We investigated the retention of surface linguistic information during reading by using eye-tracking. Rather than following the tradition of exploring the differences between meaning retention and verbatim memory, our focus was on examining how various linguistic factors influence the retention of surface linguistic information. Specifically, we investigated three grammatical alternations in German that involve changes in morpho-syntax and/or information structure but leave the propositional meaning unaffected: voice (active vs. passive), adverb positioning (front vs. mid-sentence), and different realizations of conditionals (“If” vs. “Had” clauses). We presented single sentences to participants, which were repeated either identical (e.g. passive-passive) or modified (e.g. active-passive) according to the grammatical alternation, with controlled intervals between them (2-4 vs. 12-14 intervening sentences). Results showed longer fixation durations for modified versus unmodified sentences when information-structural changes were involved (voice, adverb position). However, surface grammatical changes without a functional component (conditional alternations) did not lead to different reading behavior. In contrast to previous findings on the retention of meaning vs. form information, the impact of the linguistic factors investigated in the current study was not influenced by the repetition interval. Moreover, the L1-pattern (N=60) was replicated with the L2 (N=58) population, showing their equal sensitivity to information structure.

Transiting to Frequency Tagging: Using fast word presentation rate to test reduced emotional sensitivity in the second language

Olivia Molina-Nieto¹, Marcin Naranowicz² & Guillaume Thierry^{1,2}

¹Bangor University

²Adam Mickiewicz University

Bilinguals are thought to experience attenuated emotional responses when communicating in their second language (L2). Although previous studies have shown differential emotional modulation in L1 and L2, we need an approach that delivers individually valid data. Here, we aimed to test suitability of a Frequency Tagging (FT) paradigm to quantify the response of Polish-English bilinguals to neutral and negative words presented in rapid succession in both languages. In FT, stimuli in different conditions (here negative and neutral words) are presented at specific frequencies to which EEG is expected to entrain. Participants pressed a button upon detecting a word of a semantic category specified at the beginning of each block. Due to a technical limitation of the stimulus delivery system, negative and neutral word presentation was spread across four frequencies rather than two, making frequency power calculation unreliable. Nevertheless, in line with L2 emotional-detachment theory, ERP amplitude between 200–300 ms after word onset was reduced for negative relative to neutral words in English, but not Polish blocks. We conclude that fast-paced stimulus presentation is compatible with ERP quantification of higher-level word processing. However, frequency tagging methods may still be required to obtain valid individual measures.

Decoding the bilingual advantage: Mixed evidence from 4 executive function tasks

Emily Thomas¹, Bidisha Som¹ & Abhishek Shrivastava¹

¹Indian Institute of Technology Guwahati

The bilingual advantage highlights the effect of being bilingual that spills over into non-linguistic domains, specifically the executive control. This theory is further fine-tuned by the Adaptive Control Hypothesis, which attributes this advantage to the language switching behaviour of bilinguals. It divides the bilinguals into three groups, based on their interactional contexts. The three interactional groups are: Single language, Dual language, and Dense Code-switching Contexts, among which, the Dual language context hones the executive control functions in most of the parameters. The current study examines this by investigating the performance of the bilinguals (N: 61; age range: 18-35) in various executive control functions, including cognitive flexibility, working memory and response inhibition. 4 tasks were performed, task switching tasks (Univalent and Bivalent), N-back task and Simon task. Analysis on the performance showed that the Dual language participants outperformed the Single and Dense code-switching groups in three out of four tasks, except for Simon task where the Single group outperformed the other two groups, thus further cementing the bilingual advantage theory.

Model of infant vocabulary acquisition through mental state modeling and reinforcement learning

Shuta Fujita¹ & Yasuhiro Minami¹

¹The University of Electro-Communications

Focusing on human mental states, this study models infant vocabulary acquisition using state-of-the-art neural networks. Our model, which consists of Long Short-Term Memory (LSTM) and two Deep Q-Networks (DQNs), incorporates the following mechanism of mother-child interaction and infant curiosity. (1) Objects have 49 continuous-valued features, as shown in Martin (2020). (2) The infant selects one of an object's features using DQN, where internal rewards for new features are given to provoke curiosity. (3) The observed features are converted into a mental state using LSTM. (4) Processes (1)-(3) are repeated until the infant can estimate what the object is based on his/her mental state. The infant shows the result to a parent. (5) If the infant's behavior is correct, the parent rewards the infant. After the above process, the model is trained by reinforcement learning. In the experiment, 100 objects were created for each of seven words to simulate vocabulary acquisition. The experimental results show that a tree structure of a feature selection mechanism for object discrimination was constructed with almost a 100% discrimination rate. We also found that such psychological phenomena as shape bias and overextension can be constructed a posteriori in discrimination trees.

[PS-1.7]

Extending TRACE with realistic feature, phoneme and word inventories

Nikita Sossounov¹ & James Magnuson^{2 3 4}

¹University of Coimbra, Portugal

²Basque Center on Cognition, Brain, and Language

³Ikerbasque

⁴University of Connecticut

The TRACE model (McClelland & Elman, 1986) accounts for many details of human speech processing. A severe limitation is its small inventories of features (7, each with 9 levels), phonemes (14), and words (maximally ~1000). Attempts to expand the phoneme inventory with the original features have had limited success and are not easy to generalize across languages. Using a new reimplementation of TRACE in JavaScript (jsTRACE; Magnuson & Curtice, in prep), we replaced the 7x9 features with a 30x1 feature scheme based on acoustic-phonetic and/or articulatory features. The model runs with these new features with only minor modifications to the original model code, even with lexicons of up to ~14k words. Explorations indicate that the majority of the parameter space yields high word recognition accuracy, while preserving the ability to replicate 3 key simulations (timecourse of phonological competition, Ganong effect, and length effects). Comparisons of TRACE directly to megastudies of human spoken word recognition show interesting similarities. This approach greatly expands the potential for using TRACE to model human speech processing, including across many languages, simply by defining appropriate feature, phoneme, and lexical inventories.

Leveraging context for perceptual prediction using word embeddings

Georgia-Ann Carter^{1,3}, Paul Hoffman^{2,3} & Frank Keller^{1,3}

¹Institute for Language, Cognition & Computation, School of Informatics

²School of Philosophy, Psychology & Language Sciences

³University of Edinburgh

Pre-trained word embeddings have been used successfully in semantic NLP tasks to represent words. However, there is continued debate as to whether they encode useful information about the perceptual qualities of concepts. Previous research has shown mixed performance when embeddings are used to predict these perceptual qualities. Here, we tested if we could improve performance by providing an informative context. To this end, we generated decontextualised (“charcoal”) and contextualised (“the brightness of charcoal”) word2vec and BERT embeddings for a large set of concepts and compared their ability to predict human ratings of the concepts’ brightness. We repeated this procedure to also probe for the shape of those concepts, finding that it can be better predicted than brightness. We consider the potential advantages of using context to probe specific aspects of meaning, including those currently thought to be poorly represented by language models.

Modeling cortical tracking of statistical learning in simple recurrent networks

Qihui Xu ¹ & James Magnuson ^{1,2,3}

¹ Basque Center on Cognition Brain and Language (BCBL)

² University of Connecticut

³ Ikerbasque, Basque Foundation for Science

Cortical tracking studies find neural oscillations that appear to index emergent abstractions in statistical learning in infants and adults. When subjects are exposed to syllables based on random repetition of trisyllabic pseudowords with 3 syllables (i.e., 1 word) per second, neural oscillations are observed at 3Hz (syllable rate; Choi et al., 2020), and eventually at 1Hz, with oscillations to words suggesting pattern abstraction. We trained a Simple Recurrent Network (SRNs; Elman, 1990) on 4 trisyllabic words (tokibu, gikoba, gopila, tipolu; Saffran et al., 1996), with 3 syllables per second, and another SRN on 6 bisyllabic pseudowords with constant syllable transitional probabilities of 0.5 (French et al., 2011), with 2 syllables per second. SRNs learned both systems. Frequency-domain transformations of node activity (Stefan & Yang, 2018) showed early power at syllable frequencies (3 or 2Hz), and gradually increasing power at word frequencies (1Hz), with earlier emergence in hidden than output layers. However, the same analysis on raw input patterns also reveals power at syllable and word frequencies. This suggests that any system may exhibit resonance at element and 'word' frequencies just by learning to encode elements (e.g., syllables). We discuss implications for cortical tracking and theories of statistical learning.

Contrastive neural network reveals the structure of neuroanatomical variation within bilingualism

Wei Li¹, Aidan Aglinskis¹ & Joshua Hartshorne¹

¹Boston College

Bilingualism is highly heterogeneous, in terms of language background, age of acquisition, and learning environment. Specifically, age of acquisition and linguistic proficiency are highly correlated and both play important roles in language acquisition research. Mapping these variations to brain structure is important to understand the relationship between language and brain. However, these differences in neuroanatomy are entangled with the variation from individual differences unrelated to bilingualism, for example, age and sex. Our goal is to disentangle bilingual-specific neuroanatomical variation from the common variation. First, we build a dataset including 2,000+ brain 3D images from bilinguals and monolinguals. Second, we train a contrastive neural network (Contrastive Variational Autoencoder, CVAE) on the dataset to learn the variations from bilingual-specific variation from variations shared with monolingual groups. We examine if the bilingual-specific neuroanatomical variation correlates with individual differences in linguistic measures through Representational Similarity Analysis. The initial results reveal that the common variation (e.g. scanner and sex) in brain structure shared by two groups can be identified by CVAE. More importantly, CVAE disentangled linguistic proficiency from the common variation but not age of acquisition. It suggests that compared to age of acquisition, linguistic proficiency is more correlated with brain's structure.

Gender mismatch in ellipsis: French stripping

Emma Kious¹, Anne Abeillé¹ & Yanis Da Cunha¹

¹Université Paris Cité

Mismatches between antecedent and elided materials challenge deletion-under-identity theories of ellipsis. Mismatches in person and number are usually possible cross-linguistically (Abeillé et al. 2014, Bilbiie 2017): John is coming and his children are coming too. Under stripping, Merchant (2014) posited an asymmetry of Greek nominal gender features, confirmed by Sprouse et al. (2002) for English gendered nouns (John is an actor and Mary too. vs *Mary is an actress and John too). For Spanish adjectives, Aparicio et al. (2014) found a preference for the N_{masc}-N_{fem} order, with the feminine remnant more susceptible to elision. We searched French written corpora (Frantext after 1980) for ‘X be Adj (and/but) Y too/neither’, and got 135 hits. Our research questions are: Is gender mismatch acceptable in French stripping and does ordering play a role? Is it favored by adjective’s syncretism (Zwicky & Pullum, 1986) or frequency (Haspelmath, 2006)? We found a high rate of mismatch (53%), with no role of adjective syncretism (50%). We also find that with mismatch, the X_{fem}-Y_{masc} order outnumbers X_{masc}-Y_{fem} (60%), contrary to previous results (Spanish and Greek). We are currently running an acceptability judgement task to measure whether ellipsis is favored in case of gender mismatch, and whether ordering plays a role.

Communicative Feedback in Language Acquisition

Mitja Nikolaus¹, Laurent Prévot¹ & Abdellah Fourtassi¹

¹Aix-Marseille University

Children start to communicate and use language in social interactions from a very young age. This allows them to experiment with their developing linguistic knowledge and receive valuable feedback from their interlocutors. While research in language acquisition has focused a great deal on children's ability to learn from the linguistic input or social cues, little work, in comparison, has investigated the nature and role of Communicative Feedback, a process that results from children and caregivers trying to coordinate mutual understanding. In this presentation, I will draw on insights from theories of communicative coordination to formalize a mechanism for language acquisition: We argue that children can improve their linguistic knowledge in conversation by leveraging explicit or implicit signals of communication success or failure. This new formalization provides a common framework for several lines of research in child development and will enable us to obtain a more complete understanding of language acquisition within and through social interaction. Finally, I will present two corpus studies that highlight the role of Communicative Feedback as a mechanism supporting the production of intelligible speech, as well as the acquisition of the grammar of one's native language.

Orthographic interference in cognates: aspects of the relationship between central planning and motor execution of cognates

Laura Muscalu¹ & Laura Spinu²

¹Ithaca College

²Kingsborough Community College

Cross-language sublexical overlap promotes but also impedes cognate production. The outcome depends, among others, on the degree of similarity or on the linguistic level at which the effects are measured. Seriality of these effects has also been observed. For example, facilitation at the lexical onset followed by interference at the orthographic execution suggests that voluntary language selection achieved at one level may not ensure language-selectivity at a subsequent level. To address whether interference originates at central planning or motor planning, we separated orthographic planning and orthographic execution in a translation task by instructing participants to type the translation as soon as they accessed it from memory (condition1) OR to begin typing only after ensuring that all orthographic segments were selected (condition2). Latency to type the first letter and latency to type the complete sequence of orthographic segments were recorded. Results showed shorter lexical latency (facilitation) but longer orthographic latency and cross-language intrusions (interference) for cognates than for non-cognates in condition 1. Interference disappeared in condition 2. This suggests that, once an “orthographic loop” is planned and established, the execution level may no longer be affected by cross language interference. These findings inform the models that describe how languages interact.

Presence of Grammatical Voice Determines Scope of Sentence Planning

Malavika Krishna Kumar ¹

¹Indian Institute of Technology Gandhinagar

Relational vs. non-relational aspects of a described event are emphasised based on how much of the descriptor sentence is to be planned at the outset. This can be influenced by grammatical features such as voice, which requires a speaker to assign the agent and patient before proceeding with sentence formulation. This study uses the visual world paradigm to compare sentence production between the English and Malayalam languages. Malayalam is most notable here for its lack of defined voice structures, with speakers generally taking advantage of the free word order to rearrange subject and object for purposes of emphasis. Sentences with varying word orders were invoked not only across but within the two languages compared, by pairing each image with a question that directed the speaker's response toward a particular starting point. Preliminary observations from the ongoing data analysis indicate that Malayalam speakers are more likely to accommodate the given starting point by accordingly modifying the word order. English speakers, conversely, may disregard the given starting point in favour of a more accessible active-voiced structure. This indicates that relational information may be more preferentially encoded for English over Malayalam due to the role of voice in determining the former's sentence structure.

Cross-linguistic transfer between native language and English as a second language

Hessu Yun¹, Wei Li¹ & Joshua Hartshorne¹

¹Boston College

The effect of a first language (L1) on the acquisition of a second language (L2) is widely acknowledged across psycho-linguistics field. However, prior studies have focused on limited L1-L2 pairs and raise questions about how linguistic structures (syntactic, phonological, or genetics) either promote or hinder the learning of a new language. In current study, we collected standardized English assessment scores from English Language Learners at international schools from 36 countries and addressed the language pairs by comparing linguistic similarities between more than 30 L1s. We also examined if different linguistic structures of L1 influence the acquisition of L2 in terms of syntactic, phonological, and genetic similarities. As a result, we found older ELLs learn English at a faster rate compared to younger ELLs. Among older ELLs, students who speak L1 that shares linguistic similarities with English learn faster than ELLs whose L1 has a relatively distant relationship with English. These results not only reveal the linguistic transfer from L1 to L2 but also address the effect of age of acquisition. The finding that late learners can take advantage of the matured L1 if it's similar to L2 have implications for critical period and second language education.

The influence of translation ambiguity in L2 on reading in L1

Debra Jared¹, Xuan Pan¹, Yae-Ram Kim¹, Alexandra Sherwin¹ & Pierre Cormier²

¹University of Western Ontario

²Université de Moncton

Translation ambiguity occurs when a word in one language has more than one translation in another language. For example, the English word bank means “financial institution” and “river edge”, and each of these meanings translates into a different word in many languages (e.g., 银行 and 河岸, respectively, in Chinese). We investigated the influence of L2 English translation ambiguity on L1 reading in three languages: Chinese, Korean, and French. Sentences were created based on the dominant meanings of the English homographs (e.g., She got money at the bank on her way home) and then these sentences were translated into each L1. However, instead of the correct translation for the homograph, the translation of the other meaning or an unrelated control word was inserted. Participants read the sentences for meaning. Bilinguals spent less time reading the translation ambiguity error words than the control words, even though pilot testing indicated that both were rated as equally anomalous in the sentence context. These findings provide evidence that bilinguals’ native language processing is influenced by L2 lexical ambiguity. Mapping of two L1 words onto one L2 word could strengthen the associations between the two otherwise unrelated L1 lexical representations.

Units of perception in spontaneous speech

Tiia Winther-Jensen ¹

¹University of Helsinki

How do we as listeners make sense of transient speech flow? A likely answer is that we use similar mechanisms as we do in processing other types of cognitive input: by chunking it into smaller units (Vetchinnikova et al. 2022). Besides the limitations of our working memory, probable factors affecting the size and quality of these chunks are the same ones that guide turn-taking in conversation, namely prosody, syntax, and pragmatics (Ford & Thompson 1996). In this paper I examine what these units of perception are like and what kind of boundaries divide them. I base my findings on a view adopted from interactional linguistics: linguistic structures are primarily a tool for social interaction – as well as recent cognitive and psycholinguistic findings on speech perception and projection of turn-endings (Holler et al. 2016). The data was collected as part of the SEGMENT project (Mauranen 2019) in a listening experiment from 51 native Finnish speakers listening to extracts of Finnish spontaneous speech. The participants were asked to intuitively mark boundaries in the transcripts where they considered relevant. Using qualitative data-driven linguistic analysis, I aim to answer the question: how do we perceive speech flow in real time.

Predictive processing in HL Syrian Arabic and cL2 German

Nadine Kolb ^{1,2}, Merete Anderssen ² & Jason Rothman ^{2,3}

¹ University of Stavanger

² UiT The Arctic University of Norway

³ Nebrija University

We examine heritage language (HL) and child second language (cL2) development in the European refugee context. We investigate to what extent heritage speakers of Syrian-Arabic use grammatical gender as a predictive cue, in HL Arabic and in cL2 German? We test the following hypotheses: (i) there is an inverse relationship between cL2 growth and continued growth in the HL which will be reflected in the use of gender as a predictive cue, (ii) the general trend in (i) can be attenuated by increased HL exposure, use and support. We investigate grammatical gender as it has been shown to be a vulnerable domain for heritage speakers. We conducted an eye-tracking experiment to test use of gender for predictive processing with 6–12-year-old Syrian-Arabic heritage speakers in Germany (n=64) and used the Q-Bex questionnaire to collect information on experiential variables pertaining to exposure/use which are used as regressors in our modelling of the results. Our findings suggest that on the group level the heritage speaker children do not use gender cues predictively in Syrian-Arabic and German. However, on the individual-level we find a variation showing that individual children use gender cues predictively in Syrian-Arabic, German, none or both of the languages.

**Language-Switching Cost in Chinese-English Bilingual Reading
Comprehension: Evidence from Eye-Tracking**

Danyi Chen¹ & Kiel Christianson¹

¹University of Illinois, Urbana-Champaign

Bilinguals experience a language-switch cost when reading bilingual texts. Previous research shows the cost may be from the realization of a language change, or by the surprisal of seeing an unexpected word in an established semantic context. However, most language-switching studies focus on switches occurring within sentences, so it is difficult to examine the two potential causes separately. In this eye-tracking experiment, we teased apart the two causes by having 62 Chinese-English bilinguals read groups of sentences that would sometimes switch language in the last sentence. We manipulated language-switching direction, number of sentences preceding the language-switching sentence, and whether the sentences preceding the switch formed a coherent narrative. Results (total reading times only) show both coherence of narrative and number of preceding sentences modulate language switch cost: reading times on the first three words of the switched sentence are longer with more preceding sentences and with incoherent preceding sentences. On the third word, there is also an interaction such that the incoherence penalty disappears with three preceding sentences. The language-switching cost diminishes as participants proceed through the sentences. Finally, switching from L1 to L2 is more effortful than vice versa.

How does the creation of new semantic relationships in dialogue impact long-term semantic representations?

Alicia Fasquel¹, Wassila El Mardi¹, Isabelle Bonnotte¹, Dominique Knutsen¹ &

Angèle Brunellière¹

¹Univ. Lille, CNRS, UMR 9193 - SCALab - Sciences Cognitives et Sciences Affectives, F-59000 Lille, France

During dialogue, people tend to repeat words (Brennan & Clark, 1996) and they align their linguistic representations (Pickering & Garrod, 2004). Dialogue may thus constitute an ideal setting for the adaptation of linguistic representations. This study seeks to examine if unrelated words become semantically related following a dialogue and if such adaptations are long-lasting and integrated in the semantic network through spreading activation. We conducted three experiments in which participants interacted with a confederate to reach an agreement on how to name tangram pictures. We assessed whether using pairs of words associated with the same picture led to the creation of a new semantic relationship by using either a semantic priming paradigm with a lexical decision task immediately after the dialogue (Experiment 1), one day later (Experiment 2), or by using a semantic relatedness judgement task one day later (Experiment 3). No significant effect of semantic relatedness was found in the lexical decision task. However, participants in the semantic relatedness judgement task rated the newly related words as more semantically related. Taken together, these results suggest that dialogue is a situation during which semantic representations are adapted, even if such adaptations are not well integrated in the semantic network.

L2 proficiency modulates the distinction between personal and demonstrative pronouns in Russian–German bilinguals

Clare Patterson¹, Petra B. Schumacher¹ & Irina Sekerina²

¹University of Cologne

²City University of New York

Pronoun interpretation preferences are known to be hard to acquire in an L2. In German and Russian, both personal and demonstrative pronouns can refer to animate referents; demonstratives refer to less prominent referents, having a low subject-interpretation bias compared to personal pronouns in both languages. We measured the subject-bias for demonstrative versus personal pronouns in two offline referent-choice experiments using neutral, subject- and object-biasing verbs in German and Russian. Participants were bilingual L1-Russian–L2-German speakers ($n=24$, recruitment ongoing) with a wide range of AoA for German, as well as monolingual controls (L1-German, $n=24$, recruitment ongoing; L1-Russian, $n=76$). Subject-bias varied according to the verb-type manipulation in all groups/languages. In the neutral verb condition in Russian, the preferences of the bilingual and control groups were similar, with a strong distinction in subject-bias between personal and demonstrative pronouns. In German, however, bilinguals did not distinguish between personal and demonstrative pronouns as strongly as the control group ($p = 0.02$), a pattern which cannot be attributed to cross-linguistic influence from L1-Russian. Increasing proficiency resulted in a stronger distinction between pronoun types ($p = 0.02$), but AoA had no effect. This suggests that factors other than L1 similarity affect the acquisition of pronoun interpretation preferences.

Share the code, not just the data

Anna Laurinavichyute¹, Himanshu Yadav¹ & Shravan Vasishth¹

¹University of Potsdam

In 2019, the Journal of Memory and Language adopted a mandatory data-sharing policy to ensure the reproducibility of published findings. In order to evaluate the new policy, we attempted to regenerate results for 59 papers given all the materials provided. Two criteria were used to assess reproducibility: the strict criterion stipulated that every reported value should be reproduced exactly, while the relaxed criterion allowed for any number of small (<10%) deviations and up to 20 large (>10%) discrepancies. Eight papers had inaccessible data. Reproducibility rates ranged from 34% to 56%, depending on the reproducibility criteria. Our analysis suggests two major barriers to reproducibility – (i) Missing data: Of 51 papers with accessible data, only 38 (75%) shared all the data necessary to reproduce the reported results; (ii) Insufficient description of the analysis: Many results could not be reproduced because analysis steps mentioned in the manuscript could not be recreated. The presence of the analysis code increased the probability of reproducing reported results by 40% under both reproducibility criteria. We propose two practical steps that can increase the reproducibility of published papers: sharing the analysis code and attempting to reproduce one’s own analysis using only the shared materials.

The impact of mirative markers on self-paced reading of unexpected words

Benjamin Menashe¹, Hadar Altshuler-Frenkel², Yael Greenberg² & Michal Ben-Shachar^{1,2}

¹The Gonda Multidisciplinary Brain Research Center, Bar-Ilan University, Israel

²Department of English Literature and Linguistics, Bar-Ilan University, Israel

During sentence processing, unexpected words typically evoke longer reading times and larger N400 amplitudes compared to expected words. Mirative markers, such as “surprisingly”, are linguistic elements that encode violation of expectations (Delancey, 1997). The present study examined the modulatory effect of mirative markers on the response to semantically unexpected words. Participants (N=60, 48F:12M, 18 to 34 years old) read 160 Hebrew sentences, in a self-paced reading paradigm. We manipulated, in a 2X2 design, the presence or absence of a mirative marker in the beginning of the sentence, and the semantic expectedness of a target word that appeared downstream. A linear mixed-effects model was fit to predict the log-transformed RT to target words, with fixed effects of expectedness and mirativity, and random intercepts and slopes per participant and per sentence. We found a significant effect of expectedness ($p < 0.001$), and a significant interaction effect between mirativity and expectedness ($p < 0.01$), such that the presence of a mirative eliminated the difference in RT between expected and unexpected target words. We conclude that readers accommodate mirative markers as cues for subsequent expectation violation, thereby modifying their expectations in preparation for upcoming surprises, leading to a reduction in their surprise-like responses to later events.

Is Reading The Same As Translation In Young Multi-lectal Speakers?

Björn Lundquist¹, Anya Vinichenko¹ & Maud Westendorp¹

¹University of Tromsø

We investigate multiliteracy in young Western Norwegian speakers who are exposed to four different written lects (a generation with uniquely high levels of written language exposure): (1) Nynorsk (1st written language acquired); (2) Bokmål (dominant language in society); (3) dialect writing (text messages and chat forums); and (4) English. The four different written forms often directly interleave with spoken discourse in practice. But do speakers need to ‘translate’ written forms into their native dialect, or do written forms map directly to a single phonological dialect grammar? 97 9th grade students (15 yrs) from western Norway participated in a speeded production task, where a noun phrase (e.g. “a green banana”) in lgs (1), (2) or (4) above, was shown on a screen for 1100ms while a question (e.g., “what did he buy”) was heard. The question was always spoken in the local dialect, in which they were also told to respond. We analysed onset latencies, increase in pupil size, and several disfluency measures, against a range of linguistic measures. The results show that speakers map their speech directly to several written languages without showing signs of a process of translation. Multiliteracy is not the same as multilingualism more generally.

[PS-1.25]

Aging increases false remembering of words predicted but not seen

Katja Haeuser^{1,2} & Jutta Kray^{1,2}

¹Department of Psychology, Saarland University, Saarbrücken, Germany

²CRC 1102 Information Density and Linguistic Encoding, Saarland University, Saarbrücken, Germany

Previous research suggests that predictable words that are not encountered, elicit false remembering when probed later on. How does healthy aging affect these results, when aging is often said to reduce both the scope and detail of predictive processing? We investigated this question using a self-paced reading and subsequent recognition memory test. Groups of younger ($n=49$, mean age = 21, age range = 18-35) and older adults ($n=26$, mean age = 65, age range = 60-77) read sentences that confirmed or disconfirmed their predictions. Later, their recognition memory, as well as their response confidence, was probed for old (previously seen), new (not seen) and lure (expected but not seen) words. Results for word recognition suggested a false memory effect in both age groups (i.e., more "old" responses for lure than new words). However, in older adults, the false memory effect was larger in size overall, and increased more strongly in high confidence judgments, suggesting that older adults were more prone to false recollection. In addition, analysis of reaction times suggested that younger adults hesitated during false remembering, whereas older adults did not. Thus, predictable words remain accessible in memory after being disconfirmed, and aging increases the strength of false remembering.

Does speaker's accent modulate phonological prediction?

Marco Sala¹, Laura Casalino¹, Francesco Vespignani¹ & Francesca Peressotti¹

¹Department of Developmental Psychology and Socialisation, University of Padua

It is a matter of debate whether linguistic prediction involves only (pre-)activation of lexical-semantic representations or also of phonological and phonetic ones. We capitalized on the fact that foreign speakers usually make phonological errors to investigate whether the accent of the speaker (native-vs-foreign) is used to make specific phonological predictions. 52 participants (mean age = 23.80, SD = 2.97) were recruited to read sentence fragments in which the last word was produced by a native or a foreign speaker. They were required to perform a lexical decision task on the word presented auditorily, which could be predictable or not. Speaker's accent (native-vs-foreign) may or may not be anticipated on the basis of the face of the speaker. We observed that cueing the identity of the speaker is associated with shorter RTs when the word is predictable but not when it is not predictable. Speech prediction seems to take into account the phonological variability across speakers, suggesting that lexical information is preactivated at the phonological level.

Examining register and semantic verb-argument congruence effects: An eye-tracking reading study

Ana-Maria Pleşca¹, Katja Maquate¹ & Pia Knoeferle^{1,2,3}

¹Humboldt-Universität zu Berlin

²Einstein Center for Neurosciences Berlin

³Berlin School of Mind and Brain

In an eye-tracking reading study (N = 32), we investigated whether situation-formality information would rapidly impact comprehension and whether the processing of situation-formality-register and verb-argument congruence is (dis)similar. We compared congruence between a) situation-formality and linguistic register and b) a verb and its argument during real-time sentence reading. Participants were primed with (in)formal context sentences and object depictions. Target sentences contained manipulations resulting from crossing a) and b) with 2 levels each (match vs. mismatch). A picture-sentence verification task informed about reaction times and accuracy. We found significant rapid effects of verb-argument (in)congruence, with increased reading and reaction times, as well as decreased picture-sentence-verification accuracy for mismatches (vs. matches). When verb-argument congruence mismatched, processing efforts were likely directed toward integrating and re-evaluating the conflicting information. Unexpectedly, participants read register-matching conditions (vs. mismatching) significantly slower, possibly reflecting competition of strongly activated concepts. Moreover, accuracy decreased for conditions including both verb-argument and register mismatches (vs. only verb-argument mismatches), resulting in a register-by-verb-argument interaction. Overall the findings suggest that register may impact comprehension at a later stage, and that along with verb-argument congruence, it could have had an additive effect on comprehension.

Is phonotactic repair of onset clusters modulated by listener expectations?

Max J. Kaplan¹ & Amanda Rysling¹

¹University of California, Santa Cruz

Native English listeners typically mishear illegal *[tɫ-] syllable onsets as spectrally similar [kɫ-], in a process called phonotactic repair. This is attributable to language experience, but may be susceptible to acute manipulation of listener expectations. EEG has shown that listeners unconsciously form early, abstract representations of some illegal sequences; the present work asks whether unrepaired representations can be active in conscious linguistic behavior. We also investigate the timecourse of phonotactic repair, and the effects of task and instructions on response accuracy. Participants heard syllables, some beginning with *[tɫ-], presented in gates of different lengths (+10 ms to +190 ms following the stop release). Participants received differing instructions before performing a free transcription or categorization task, without feedback. Nearly all illicit *[tɫ-] stimuli were reported as "KL", but accuracy increased somewhat when participants were told they would hear non-English sequences. Categorization (with response options presented orthographically) was also more accurate than transcription. Categorization was slower when responding "TL" (compared to licit responses), suggesting a post-perceptual decision cost. However, RTs did not differ by stimulus onset. *[tɫ-] response accuracy was greatest at earlier gates (preceding the vowel), suggesting additional auditory information or phonological structure is detrimental to the activation of illicit representations.

Transfer effects or a learning mechanism? Pronoun resolution in adult L2 learners of German by speakers of null- and overt-subject languages

Anna Czypionka¹, Angelika Golegos¹, Lisa Hindelang², Gladys Laporte¹ & Theodoros Marinis¹

¹University of Konstanz

²formerly University of Konstanz

Languages differ in whether they allow silent subjects (null-subject-languages, NSLs) or not (overt-subject-languages, OSLs). How do different subject-encoding strategies in first languages (L1) affect pronoun resolution in second language (L2) learning? Previous findings are contradictory, showing both native-like and non-native-like pronoun resolution in OSL-L2s for learners with NSL-L1s. A possible explanation, namely, different pronoun resolution strategies in different NSL-L1s, remains to be tested. We present data from a picture-selection-task (32 items) assessing pronoun resolution in three conditions (personal, demonstrative, and stressed personal pronouns) in OSL-German. We compare performance by natives (74 participants) to highly-proficient L2-learners from different L1s: Greek (NSL, flexible pronoun interpretation, 30 participants), Italian (NSL, fixed pronoun interpretation, 29 participants) and Dutch (OSL, German-like pronoun resolution, aiming for 30 participants). Results show that highly-proficient Greek and Italian-L1 speakers: (a) do not differ significantly from each other, arguing against subtle L1-transfer effects. (b) differ significantly from German natives, performing at chance. L1-Dutch speakers (data collection ongoing) will show whether this is due to a general learning mechanism or whether there is a difference between L1-NSL and L1-OSL in L2-OSL-performance due to broader transfer effects. We will also discuss the role of age-of-onset, length-of-exposure, and proficiency in L2-pronoun resolution.

Real-time processing of ditransitive events in German: An eye-tracking study

Judith Schlenker¹ & Marit Westergaard^{1,2}

¹UiT The Arctic University of Norway

²NTNU Norwegian University of Science and Technology

Unlike previous research on the processing of ditransitives in German, the current study controls for the effect of animacy and the perceptual salience of the cues and thus extends our understanding of the predictive use of case marking. Native speakers of German (n=35) were shown two visual scenes depicting an event involving three animate entities and at the same time heard sentences that included a ditransitive verb (e.g. Der Krankenpfleger bringt dem Patienten morgens die Ärztin 'The nurse brings the doctor to the patient'). Half of the 24 ditransitive sentences had the order indirect object>direct object (IO-DO), the other DO-IO. For a fully counterbalanced design, we additionally manipulated the order of masculine and feminine nouns after the verb. Results show that not just the order of objects, but also the perceptual salience of the case cue influences the processing of ditransitives: If dative and accusative are marked by 'der' and 'die' (feminine gender), participants prefer the target over the competitor scene prior to the onset of the second object, indicating that they predict its thematic role. However, if the dative and accusative forms are 'dem' and 'den' (masculine gender), we observe no stable target preference prior to the second object.

The processing of non-canonical verb-subject orders in Italian: Does the type of verb matter?

Andrea Listanti ^{1,2}, Sol Lago ² & Jacopo Torregrossa ²

¹University of Trento

²Goethe Universität Frankfurt am Main

Non-canonical word orders are hard to process, a fact often attributed to their infrequency in speech. Can this difficulty be further modulated by syntactic factors? We addressed this question by manipulating the type of verb (transitive vs. unaccusative) in a non-canonical construction in Italian: postverbal subjects. Postverbal subjects are syntactically more complex and require stricter discourse conditions when following transitive (vs. unaccusative) verbs, which might make them harder to process. We tested this hypothesis using sensitivity to subject-verb agreement violations as a diagnostic of processing difficulty. The results of a speeded acceptability task (56 participants) and two self-paced reading tasks with and without context (96 and 200 participants, respectively) failed to show an effect of verb type on the processing of agreement violations. However, we found other differences: acceptance rates in the acceptability task decreased for transitive sentences, which also took longer to read than unaccusative ones when preceded by a context in the self-paced reading task, consistent with increased processing difficulty. We suggest that verb type modulates difficulties with non-canonical orders, but that morphosyntactic relations like agreement are an inappropriate diagnostic. Instead, measures targeting interpretative processes, such as discourse integration, provide a more promising avenue for future research.

**BA and consequences: unspecific morphosyntactic cues shape interpretation
(but not prediction) of upcoming entities in Mandarin comprehension**

Fang Yang¹, Holly Branigan¹ & Martin Pickering¹

¹The University of Edinburgh

Comprehenders predict upcoming objects by using linguistic cues that explicitly encode perceptual features (Pickering & Gambi, 2018). What happens when a cue is non-specific, such as the Mandarin preposition “BA”, which indicates a transitive event as being highly consequential, but is not specific about the resultant state? Can Mandarin speakers use “BA” to predict upcoming entities? We tested this in four forced-choice-image-selection reading studies (n=20, 24, 60, 40) and a visual-world-eye-tracking listening study (n=24). Participants viewed entities in default states (a glass of beer/water) and changed states (spilled wine/finished juice) while reading or listening to sentence fragments involving “BA” or “see” (“He BA” vs. “He saw”). Participants were more likely to choose changed-state entities in the “BA” than “see” condition. Moreover, this effect was enhanced by the presence of classifiers (e.g., “a glass of”), but not modulated by associative effects (i.e., between agent and entity; “Mr Drunkard” – wine). In contrast, participants’ eye-movement patterns did not show reliable evidence for the “BA” effect. We suggest people interpret “BA” as indicating the upcoming entity has undergone a consequential event, e.g., change of state. However, we find no evidence comprehenders use “BA” to predict such an entity during online processing.

**Greater prediction error does not lead to better syntactic adaptation:
Evidence from Chinese ambiguity resolution**

Zeping Liu¹ & Chien-Jer Charles Lin¹

¹Indiana University Bloomington

Syntactic adaptation in sentence processing argues that the increased exposure to a syntactic analysis would increase the probability that this analysis is adopted in subsequent parsing. Previous work indicates that when a structure is dispreferred, it yields greater prediction error and thus makes the parser place more weight on this structure. In this study, we examine this hypothesis by focusing on the ambiguous sequence V+N1+DE+N2 in Chinese. This fragment is structurally ambiguous between a relative clause (RC) parse (preferred) and a Complement Clause (CC) parse (dispreferred), where the likelihood of each parse can be modulated by whether N1 or N2 is more likely to be the object of the verb. In Exp. 1, we used weakly RC-biased fragments (N1 and N2 are semantically plausible objects of V) to investigate whether the exposure to the CC parse leads to syntactic adaptation. In Exp. 2, we increased the prediction error by using strongly RC-biased fragments to test whether greater surprisal leads to stronger adaptation. Our results suggested that errors arising from parsing the dispreferred parse was not sufficient for creating greater syntactic alignment (Exp.1), even though a larger prediction error has been created (Exp. 2).

Investigating the real-time processing of register in spoken language comprehension

Angela Patarroyo¹, Katja Maquate¹, Aine Ito² & Pia Knoeferle^{1,3,4}

¹ Humboldt-Universität zu Berlin

² National University of Singapore

³ Berlin School of Mind and Brain

⁴ Einstein Center for Neurosciences Berlin

In two Visual-World eye-tracking studies (N=32 each; 34 critical items each) we examined whether standard language processing mechanisms closely interact with register representations. To this end, we manipulated congruence in context formality and register and crossed this with semantic verb-argument (in)congruence. Comparing between blocked and mixed formality context presentation evaluated further whether participants adjust trial-by-trial to situation-formality shifts (Experiment 2) or benefit from habituation (Experiment 1). German speakers listened to register variants in a German target sentence when this sentence (mis)matched the formality of a preceding spoken context sentence, given the object argument either matched or mismatched verb meaning constraints. The results revealed a main effect of verb-argument congruency, but not of formality-register congruency, replicating immediate use of verb-argument relations in language comprehension. Formality-register and verb-argument congruency had a significant interaction in Experiment 1 only. Our results suggest that standard language processing mechanisms may closely interact with register representations when participants have time to habituate to the formality of a context (Experiment 1) but not when the social-formality context changes quickly from formal to informal (Experiment 2).

Similarity-based interference impairs comprehension: The case of Animacy

Naama Gidron¹, Tal Ness² & Aya Meltzer-Asscher¹

¹Tel-Aviv university

²University of Maryland

Research investigating memory mechanisms in sentence processing has revealed that comprehension is prone to memory fallibility: during the maintenance and subsequent retrieval of an NP for dependency resolution, other NPs with similar features may cause interference. In two experiments, we investigated this interference, comparing two types of long-distance dependencies: subject-verb and filler-gap, when the latter was often considered to recruit specialized memory mechanisms. In a self-paced reading experiment we manipulated dependency type and similarity of the animacy feature between the subject/filler and a subsequent NP. We measured encoding costs on the second NP, to examine how similarity affects encoding in the two structures. Although not significant, we observed a trend in the data suggesting that similarity affects the dependencies differently. Since more data were needed to substantiate this claim we conducted a second experiment investigating comprehension of the same sentences. We found a significant main effect of similarity on both dependencies. That is, when the two NPs in the sentence were animate, participants were significantly less accurate than when the NPs were dissimilar in animacy. This suggests that similarity causes encoding interference and affects our comprehension, regardless of the dependency that needs to be maintained in memory.

**The relationship between individual differences in sentence reading, parsing
and text comprehension in children**

Mads Poulsen¹, Jessie Leigh Nielsen¹ & Rikke Vang Christensen¹

¹University of Copenhagen

Individual differences (ID) children's accuracy in establishing propositional sentence meaning from syntactic cues (parsing) when listening to or reading sentences has recently been shown to be as strong a predictor of ID's in children's text comprehension compared to well-established predictors such as decoding and vocabulary (e.g. Poulsen et al. 2016; 2022; Sorenson Duncan et al., 2021). But the pipeline from sentence reading to text comprehension is unclear. We investigated the effect of ID's in decoding and auditory parsing on sentence reading speed and text comprehension. Method: 136 grade 6 students completed standardized tests of text comprehension, decoding, auditory parsing, and a parallel test of written parsing that also tracked sentence reading speed. Results: Sentence-level measures were strong correlates of text comprehension. Sentence reading speed was correlated with decoding efficiency, but not auditory parsing, suggesting that ID's in parsing does not influence children's reading speed. However, both were significant predictors in multiple regressions where written parsing accuracy appeared to function as a suppressor. Discussion: The results confirm the strong relationship between ID's in parsing and text comprehension and indicated that ID's in parsing did influence sentence reading speed, but that this is only visible when speed-accuracy trade-offs were taken into account.

Learning effects in the course of a reading experiment

Jan Chromý¹ & Fabian Tomaschek²

¹ Charles University

² University of Tübingen

The paper examines the extent to which participants improve their performance in the course of an experiment. Three self-paced reading experiments were conducted with large samples of native Czech speakers (234; 223; 207), each containing 96 items of four types. The items differed in their word order, but always contained seven words with a similar syntactic structure (subject, verb, locative modifier modified by an adjective, direct object modified by an adjective). Open-ended comprehension questions were used which targeted either adjectives, or nouns. The ratio of the questions targeting the nouns and questions targeting the adjectives was manipulated in the three experiments (50–50 in Exp1, 75–25 in Exp2, 25–75 in Exp3). The mixed-effects models yielded a clear relation between response accuracy and trial number: the later the stimulus, the higher response accuracy. Crucially, stimuli order produced a similar effect even for RTs. For each word of each item type, we documented a clear effect of stimuli order: the later it was shown in the experiment, the faster the RT. Visible learning patterns were thus documented. Participants were both getting better in answering the questions and getting faster in their reaction times in the course of the experiment.

Development of an online auditory working memory test for L2 learners

Yutaka Yamauchi ¹

¹ Soka University, Tokyo JAPAN

Working memory, which deals with processing and storing information, plays an essential role in language comprehension and production. High proficiency learners are reported to have high working memory capacity (WMC) and perform complex linguistic tasks. Although a number of listening span tests (LST) have been used in psycholinguistic research, most of them are developed for L1 learners. The use of LST for L1 to L2 learners could lead to problems in validity and reliability, because levels of vocabulary and sentence structure in stimulus sentences are so difficult that the test results do not reflect L2 WMC but L2 proficiency levels of test takers. In this study, to solve this problem an online L2 LST with vocabulary, grammar, and sentence complexity levels controlled for L2 learners was originally developed and experiments were conducted to confirm the usefulness of this test. A total of fifty L2 learners took three tests: L2 LST, L2 proficiency tests, and L2 simultaneous oral reproduction performance tests. Statistical results showed that L2 LST scores significantly correlated with the other two test scores. This suggests that the L2 LST is useful to measure WMC for L2 learners.

Is there a relationship between logical reasoning and susceptibility to linguistic illusions?

Dario Paape ¹

¹ University of Potsdam

Speakers sometimes accept ill-formed sentences as well-formed (“More people have been to India than I have”; comparative illusion). Differential susceptibility to such linguistic illusions across speakers may be due to superficial processing (e.g., Ferreira & Patson, 2007) and/or mental “repairs” of speech errors (e.g., Levy, 2008). Both factors may be related to a more intuitive versus more analytical reasoning style. We explored this connection by testing the same participants on a syllogistic reasoning task with believable and unbelievable conclusions (e.g., Evans et al., 1983) and a two-dimensional sentence judgment task (“interpretable” YES/NO; “formally correct” YES/NO) across five illusion types. Participants with stronger effects of syllogism validity (irrespective of believability) showed fewer “YES interpretable, YES correct” judgments for “inversion” illusions (“The mother gave the candle the daughter”), comparative illusions, and NPI illusions (“A man who had no beard was ever happy”), suggesting more analytical processing. Speech error repair (“YES interpretable, NO not correct”) was positively affected by logic ability only for “inversion” illusions. Missing-VP illusions and “depth charge” illusions (“No head injury is too trivial to be ignored”) showed no effects of logic ability. The results suggest a relationship between logic ability and illusion susceptibility that varies between constructions.

Predictive Eye Looks in L2 English Speakers are Easily Disrupted by Cognitive Load

Christopher Allison¹, Leigh Fernandez¹ & Thomas Lachmann¹

¹RPTU Kaiserslautern-Landau

We investigated predictive looks using the Visual World Paradigm (VWP) in L2 English speakers under three levels of cognitive load. The experiment consisted of three blocks, in which participants had to remember the order and location of 0 (no-load), 2 (low-load), or 4 (high-load) squares. This was followed by a standard VWP trial (with predictable and unpredictable sentences) and then a recall period for the correct sequence of squares. Block order was partially counter-balanced (ABC or CBA). Participants made predictive looks to the target in each condition. Looks to the target diverged from the distractors in the predictable condition at 820ms in the no-load condition, 1200ms in the low-load condition, and 1260ms in the high-load condition. Even though participants were considerably more accurate completing the low-load manipulation, (90.3% vs 66.1%), predictive looks were similarly delayed. Interestingly, participants who started with the highest load condition showed no evidence of predictive looks in that block and overall reduced predictive looks compared to the low-load start. These findings suggest that predictive looks are (1) incrementally modulated and (2) gated by available cognitive resources. Furthermore, our findings suggest that individual differences (e.g., working memory, RAN, English proficiency) vary in importance depending on cognitive load.

The effect of similarity-based interference in SOV languages -- Evidence from Hindi

Samar Husain ¹, Apurva Apurva ², Ishita Arun ³ & Himanshu Yadav ⁴

¹ Indian Institute of Technology Delhi

² Indian Institute of Management Jammu

³ Indian Institute of Technology Gandhnagar

⁴ University of Potsdam

Sentence comprehension in head-final languages provide weak support for memory constraints. For such languages top-down prediction has been shown to be more salient. To investigate this issue we use items such as (1) where preverbal nouns either have similar case-markers or not. Reading times at the clause-final verb (khariid-neko) were higher in conditions with similar case-markers compared to unique case-markers. A cloze task was conducted to rule out prediction error as the cause of this slowdown. These results show a clear effect of similarity-based interference at the verb even when verbal prediction is controlled. Additionally, through a cloze study we find increased prediction errors in preverbal configuration involving similar case markings suggesting that top-down prediction is also influenced by memory-based constraints. Together the work shows that memory-based constraints subserve both bottom-up dependency completion as well as top-town predictive processes.

1. Sita-ne Hari-ko kitaab-ko/0 khariid-neko kaha.

Sita-_{Ergative} Hari-_{Accusative} book-_{Accusative/0} buy-_{non.finite} told

‘Sita told Hari to buy the book.’

Auditory Perceptual Simulation (APS) aids recovery from garden-paths

Kiel Christianson¹, Laura P. Valderrama¹, Sarah-Elizabeth Deshaies¹, Danyi Chen¹ & Jack Dempsey¹

¹University of Illinois, Urbana-Champaign

Garden-path sentences are misinterpreted at various rates, depending on their structure. Some types appear largely resistant to reanalysis. This study asked whether auditory perceptual simulation (APS), actively imagining a voice saying the text being read silently, would influence the rate and manner in which garden-paths were recovered from and correctly interpreted. Both online (eye-tracking) and offline (comprehension probe) results show APS facilitated recovery from NP/Z garden-paths and Coordination garden-paths during rereading, and slightly improved first-pass comprehension of Reduced Relatives. Notably, the two garden-path types most clearly facilitated by APS are the ones that are disambiguated with a large prosodic break (indicated by a comma in writing). These results are interpreted as evidence for APS's imposition of a detailed prosodic contour on text during silent reading. Implications for the application of APS as an aspect of reading pedagogy will be discussed.

Early effect for basic syntax processing in language comprehension

Bissera Ivanova^{1,2,3,4}, Deirdre Bolger^{2,4}, Benjamin Morillon^{1,3,5}, Liina Pykkänen^{6,7,8} & Kristof Strijkers^{1,2,9}

¹ Aix-Marseille University

² Laboratoire Parole et Langage, Marseille, France

³ Institut de Neurosciences des Systèmes, Marseille, France

⁴ Institute of Language, Communication, and the Brain, Marseille, France

⁵ INSERM

⁶ Department of Linguistics, New York University

⁷ Department of Psychology, New York University

⁸ NYU Abu Dhabi Institute

⁹ CNRS

While the processing of syntactic structure is a crucial component of language comprehension, the neural dynamics that underlie it remain disputed. In particular, little evidence is available on the cortical activation over time in response to simple syntactic operations, since most research has relied on complex, ambiguous or erroneous syntactic manipulations. Therefore, in this study we adopt a minimalist paradigm where we use three-word noun phrases matched for semantic content but with a different syntactic structure. Specifically, we contrast the processing of the last word between condition 1. Adj-N-Adj and condition 2. N-Adv-Adj where the only difference is that the prenominal adjective in 1. becomes an adverb in 2. as in 'vrai diamant pur' - 'diamant vraiment pur'. Crucially, the critical word is the same between conditions, but with a different syntactic role. In this ongoing study we have thus far tested 11 French native speakers and recorded their brain activity with high-density EEG. Preliminary results suggest that this minimal difference in syntactic structure already produces effects within 100ms of processing the critical word. In a subsequent analysis we will localize the sources of this early effect to constrain neurobiological models of syntax.

Reading Comprehension while naturalistic reading in adolescent with different reading abilities: an EEG study

Marina Norkina¹, Alina Zhunussova¹, Alexandra Berlin Khenis¹, Anastasiia Streltsova¹ & Tatiana Logvinenko¹

¹ Sirius University of Science and Technology

Previous studies have shown that theta and alpha oscillations are involved in the key cognitive processes: an increase in theta was associated with an increase in working memory load in language comprehension task (Bastiaansen et al., 2008), whereas alpha attenuation was associated with reading comprehension of complex syntactic structured sentences (Wang et al., 2022). The current study examined the differences in theta and alpha oscillations in readers with various reading abilities performing reading comprehension tasks. Sixty native Russian language speakers aged 12 to 17 participated in the study. Participants read expository paragraphs and then performed recall and true-false tasks. In total, 6 paragraphs were used. The EEG was recorded during the experiment at a sampling rate of 500 Hz from 128 scalp electrodes. We hypothesise that readers with higher reading abilities exhibit higher alpha power attenuation during naturalistic reading and higher theta power during recall and true/false tasks than those with lower reading abilities. Participants also completed a series of behavioural assessments to evaluate their verbal and nonverbal working memory and language abilities, which we subsequently correlate with task performance. The results will elucidate the contribution of different behavioral and neurobiological mechanisms to individual variability in reading comprehension.

The effects of contextual and morphosyntactic information on linguistic prediction and wh-question interpretation

Matthias Reiner^{2 1}, Petra Hendriks¹ & Esther Ruigendijk²

¹University of Groningen, Netherlands

²Carl von Ossietzky Universität Oldenburg, Germany

Language processing has been argued to be predictive. Linguistic predictions consist of upcoming words and structures deemed most likely based on preceding information. However, it is still unclear what kind of information is used and how different sources of information interact. Evidence points to the use of both morphosyntactic cues and contextual information in linguistic prediction. For instance, when interpreting wh-questions: Welcher (NOM) Frosch (SG) sieht die Vögel (PL)? Which frog sees the birds? To interpret this question and resolve ambiguity, German listeners rely on cues like subject-verb agreement and case. Contextual information like discourse topic also informs predictions: the topic is commonly interpreted as the subject, enabling listeners to quickly assign thematic roles. We utilize wh-question interpretation in a picture-selection task using eye-tracking to examine the role of both morphosyntactic and contextual information on generating and revising predictions. Discourse topic and thus the prediction of the subject role are manipulated through short preceding sentences. The resulting potentially false predictions need to be revised through morphosyntactic cues. By investigating both gaze data as well as response times we can investigate the effect of contextual and morphosyntactic information on linguistic prediction and interpretation. We are currently in the data acquisition process.

The role of auditory working memory in L2 simultaneous oral reproduction processing

Yutaka Yamauchi ¹

¹Soka University, Tokyo JAPAN

L2 working memory (WM) capacity is limited and more advanced learners are reported to use WM more effectively. Content shadowing (CS) or simultaneous oral reproduction requires learners to decode and temporally store auditory information while simultaneously reproducing the message orally. CS cognitive load is so high that WM effective use is expected to be strongly related to CS performances. However, objectively testing WM and CS performances was difficult and few studies have been done so far in the L2 research. This study conducted experiments to examine the relationship between WM and CS. A total of fifty L2 learners took CS tests and their recorded utterances were analyzed and scored by the automatic evaluation system using AI and the recent speech technology. Then the participants took listening span tests (LST) originally developed for L2 learners. They listened to a set of sentences, judged whether each sentence content was true or false, memorized and recalled the last word of each sentence. Statistical results showed that CS scores had significantly high correlation with LST scores. Although this does not guarantee the cause-effect relationship, it suggests that WM plays crucial roles in CS performances and continuous CS training could improve L2 WM effective use.

Listeners prioritize acoustic information over orthographic information in rate normalization

Giulio Severijnen¹, Hans Rutger Bosker^{1,2} & James McQueen^{1,2}

¹Donders Institute for Brain, Cognition, and Behaviour

²Max Planck Institute for Psycholinguistics

Listeners adapt to varying speech rates through rate normalization, which is generally considered to be a low-level auditory process. The present study examined whether orthographic information about the number of syllables in a word affected how listeners normalize for the same acoustic input. We ran an experiment in which participants heard Dutch word lists containing duration-matched monosyllabic vs. bisyllabic context words with /ɑ-a:/ targets as penultimate word (e.g., klom, fruit, trein, stad/staat, fluit vs. kolom, vooruit, terrein, stad/staat, voluit). Crucially, by replacing the first vowel in the context words with a schwa (e.g., kəlom), these were made acoustically ambiguous between monosyllabic and bisyllabic. Participants were visually presented with orthographic transcriptions of mono- or bisyllabic versions, which disambiguated the acoustics. We predicted that the bisyllabic condition (ambiguous acoustics, bisyllabic orthography) should be perceived as faster than the monosyllabic condition (ambiguous acoustics, monosyllabic orthography) and hence induce more /ɑ:/ responses to the targets. Though clear monosyllabic and bisyllabic context words did induce differential target word perception, no effect of orthographic disambiguation of ambiguous context words was found. Despite the orthographic information about the intended form, listeners mainly used the acoustic input in rate normalization.

Language Competence in Parkinson's Disease: A Systematic Review of 20 Years of Research

Maura Panozzo Chiomento¹, Maria Vender¹ & Denis Delfitto¹

¹University of Verona

Parkinson's disease (PD) is the second most common neurodegenerative condition worldwide. Although diagnostic criteria heavily rely on the motor component, non-motor symptoms of PD are now recognised to emerge several years before its motor manifestations. Assessing the role of language impairment as a non-motor marker of PD is thus paramount to contributing to an effective and timely diagnosis. In this systematic review, we synthesise the state of knowledge on language competence in PD and provide a systematic and comprehensive overview of the issue following the PRISMA guidelines. Eligible studies were published from 2002 to 2022 and investigated language competence in patients having idiopathic PD without dementia. Results from the 67 selected articles show that non-demented PD patients exhibit deficits across multiple language levels. Impaired domains include phonological processing, derivational and inflectional morphology, comprehension of complex syntactic structures, lexical and semantic competence, and pragmatic abilities. Although further research is required to assess the robustness of language impairment as a predictor of PD, results of this systematic review indicate that linguistic data might indeed inform diagnostic criteria and be exploited to complete the clinical picture of PD within the pre-motor window, reducing diagnostic delay and substantially impacting patients' quality of life.

Metacognition of language and domain-general abilities in the acute phase after stroke

Karen Arellano-Garcia^{1,2}, David Soto¹, Maria del Mar Freijo^{3,4} & Simona Mancini¹

¹Basque Center on Cognition, Brain and Language (BCBL)

²University of the Basque Country

³Hospital Universitario de Cruces

⁴Biocruces-Bizkaia Health Research Institute

Metacognition is the ability to reflect about one's cognitive and behavioral processes. It has been suggested that if a patient is aware of their own mistakes, they may be more likely to try to correct them. Thus, metacognition may play a crucial role in post-stroke recovery. In this study, we investigate the extent to which metacognition of language and domain-general abilities is impaired in the acute phase after stroke and whether participants with left-hemisphere (LH) vs right-hemisphere (RH) stroke show any differences in impairment. Fifty-four patients that had suffered from a first ischemic stroke either in the LH (N=29) or RH (N=25), no more than one week prior, and sixteen non-brain damaged (NBD) participants, matched in age, sex, education and linguistic profile with the clinical groups, were recruited. We assessed metacognition of one domain-general task (Raven's Colored Progressive Matrices) and a few linguistic abilities (phonology and syntax processing) within the first week after stroke. Participants were asked to judge their performance based on a visual scale after each trial (4="very sure", 1="unsure"). The data presented here show that metacognition is impaired following a first ischemic stroke and appear to indicate that this might be more prominent after LH stroke.

Relationship between prediction error processing and language in autistic and non autistic children

Fanny Papastamou¹, Charlotte Dumont¹, Marie Belenger¹, Arnaud Destrebecqz¹ & Mikhail Kissine¹

¹ Université libre de Bruxelles

Error-based theories of learning suggest that unexpected events prompt individuals to update their learning by increasing their attention to predictive cues. Alongside, Bayesian models of autism argue that autistic adults and children give more weight to their prediction errors during learning than non-autistic individuals. Therefore, we hypothesized that autistic and non-autistic children may differ in their learning style, with autistic children exhibiting faster attentional shifting towards predictive cues following unexpected events compared to non-autistic children. Language delays and verbal idiosyncrasies are commonly observed in autism, but their underlying mechanisms are still not fully understood. Therefore, we also explored the relation between autistic children learning style and their language development and abilities. Participants' learning style are measured through children's anticipatory fixations, predictive accuracy and reaction times. Participants' verbal abilities are assessed through participants' scores to the CELF scale. 23 autistic and 13 non-autistic children aged between 9 and 16 were recruited. We plan to recruit another 10 non-autistic children before the end of the month.

Language Deficits in Children With Developmental Language Disorder Across Slavic Languages: Systematic Review

Marina Norkina¹, Elizaveta Ivanova², Anastasia Sukmanova³ & Alisa Kosikova⁴

¹ Sirius University of Science and Technology

² University of Surrey

³ National Research University Higher School of Economics

⁴ Saint Petersburg State University

Developmental Language Disorder (DLD) causes significant deficits in expressive and/or receptive language and affects around 7% of the population (Bishop, 2017). Despite myriads of studies, many topics within the field need elaboration, e.g. the representation of DLD among the Slavic language group. In our systematic review we included all original studies in English and Russian databases (PROSPERO ID - CRD42021235107). Articles were divided by the following language domains: phonology, morphology, syntax, semantics and pragmatics. We were interested in two groups: typically-developing controls and those diagnosed with DLD in accordance with DSM-5 (Bishop, 2017). The final review sample consisted of 30 studies in among them Russian language (=18), Slovak (=4), Croatian (=3), Serbian (=3), Czech (=2). The results describe five language domains in children across Slavic languages. Our preliminary results showed that a key deficit in children with DLD lies not with syntactic computation, but with morphological processing, in addition to their deficits in working memory resources (Rakhlin et al., 2016). The potential implications of the current research include spreading higher awareness about DLD specifics in Slavic language group, thus stimulating better diagnostics and more precise interventions among those affected.

Surface vs. deep anaphora and gender mismatch in Romanian

Gabriela Bîlbîie^{1,2}

¹University of Bucharest

²Laboratoire de Linguistique Formelle (LLF), Paris

Mismatch effects in elliptical constructions provide an important testing ground for investigating the identity condition claimed to hold between the antecedent and the unpronounced material. In this paper, we focus on gender mismatch in Romanian stripping-like constructions, in particular on inflectional mismatches on adjectival predicates in negative stripping ('X is ADJ, but not Y') and negative pseudostripping ('X is ADJ, but Y no'), where Romanian displays the homophonous negative form *nu* 'no/not'. We ran an Acceptability Judgment Task, by using a 2x3 design, with two factors MATCHING and CONSTRUCTION, and paid attention to the gender ordering (Masc>Fem vs. Fem>Masc) and the adjectives' morphology (\pm allomorphy). Though all of the conditions received very high ratings, the statistical analysis (clmm, Christensen 2018) shows that stripping mismatches are significantly degraded as compared to pseudostripping, and, unlike previous research on other languages (Aparicio et al. 2015 for Spanish), the gender ordering does not seem to play a role. The penalty for gender mismatch in stripping compared to pseudostripping is expected, as stripping displays the behaviour of 'surface anaphora' (Hankamer & Sag 1976), unlike the pseudostripping, which behaves rather as 'deep anaphora', being less sensitive to the form of their antecedents than surface anaphora.

**Language Control over Structural Representation in Spanish-English
Bilinguals**

Anahy Barragan-Diaz¹ & Iva Ivanova¹

¹University of Texas at El Paso

Bilinguals inhibit lexical representations from the non-target language to avoid wrong-language intrusions (Green, 1998). But do they inhibit structural representations? English-dominant Spanish-English bilinguals described pictures in English (Phase 1), then in either Spanish or English across participants (Phase 2), and again in English (Phase 3). We focused on the English dative alternation, because the surface form of one of its variants - double objects - is not shared with Spanish. If structural inhibition exists, speaking Spanish in Phase 2 should inhibit English double objects, which should subsequently be slower to access when needed in Phase 3 (as numerous studies show happens for single words, e.g., Costa & Santesteban, 2004) – and hence be used less often than in Phase 1. In Experiment 1, Phase 2 consisted of monotransitives, to test if English double objects would be inhibited by producing any Spanish structure (language-wide inhibition). In Experiment 2, Phase 2 consisted of ditransitives, which in Spanish can only be expressed with prepositional datives, to test structure-specific inhibition. Neither experiment showed the predicted effect: Double object production after speaking Spanish did not decrease more than double object production after speaking English. This result does not support the existence of structural inhibition.

Does syntactic category constrain semantic interference during sentence production? A replication of Momma et al. (2020)

Constantijn van der Burght¹, Lorien Schipperus¹ & Antje Meyer¹

¹Max Planck Institute for Psycholinguistics

The semantic interference effect in picture naming entails longer naming latencies for pictures presented with semantically related versus unrelated distractors. One factor suggested to influence the effect is word category. However, results have been inconclusive. Momma, Buffinton, Slevc, and Phillips (2020, *Cognition*) used a sentence-picture interference paradigm where the sentence context (“her singing” or “she’s singing”) disambiguated the word category (noun or verb, respectively) of distractor and target, manipulating their word category match/mismatch. Semantic interference was only found when distractor and target belonged to the same word category, suggesting that syntactic category constrains lexical competition during sentence production. Considering this important theoretical conclusion, we conducted a preregistered replication study with Dutch participants, following the design of the original study as closely as possible. In each of 2 experiments, 52 native speakers read sentences containing sentence-final distractor words that had to be interpreted as nouns or verbs, depending on the sentence context. Subsequently, they named target action pictures as either nouns (experiment 1) or verbs (experiment 2). An interaction between semantic relatedness and word category will be considered evidence for a syntactic constraint during lexical selection. Results will be available before the conference.

Syntax drives default language selection in bilinguals

Jessie E. Quinn¹, Victor S. Ferreira¹, Matthew Goldrick² & Tamar H. Gollan¹

¹University of California, San Diego

²Northwestern University

In mixed-language tasks, bilinguals often show more difficulty in their dominant language compared to their nondominant language. This dominance reversal has been linked to inhibition of the dominant language, supporting language selection by reducing dominant language interference. An interesting possibility is that language selection may be more automatically employed at another level, the syntactic level. That is, syntactic processing may trigger the activation and selection of a default language, driving production and, thus, allowing inhibitory mechanisms the resources to reduce nontarget interference. We investigated how linguistic context supports language selection. Sixty Spanish-English bilinguals read aloud paragraphs with language switches. About 5% of the time they produced translation-equivalent intrusion errors (e.g., saying "el" instead of "the"), avoiding switching in their speech. Normal paragraphs contained semantic and syntactic information, nouns-swapped paragraphs contained only syntactic information, and random paragraphs contained neither semantic nor syntactic context. Results show that dominance reversal is modulated by linguistic context with reversal effects robust and stable in both normal and nouns-swapped paragraphs. In contrast, random paragraphs showed weak effects of reversed dominance. The fact that syntactically well-formed but semantically anomalous nouns-swapped paragraphs led to dominance reversal supports the idea that syntactic processing guides language selection in connected speech.

Word order regularisation is not driven by processing demands in language use

Björn Lundquist¹, Paulina Lyskawa¹ & Jade Sandstedt^{1 2}

¹University of Tromsø

²Høgskulen i Volda

Natural languages rarely exhibit free ordering of words: changes in word order usually affect the semantics or pragmatics of sentences. Still it is unclear what drives the development of rigid mappings between form (here, word order) and meaning in natural languages: is it driven by biases in the acquisition process or by performance pressures (production/perception) in language use? We investigate onset latencies, production times, and hesitations in a database of elicited speech (Nordic Word-order Database) of variable and non-variable sentence types from Swedish and Norwegian. We find that variable sentence types are not associated with more production difficulties than rigid sentences. In a Norwegian follow-up study, we correlate the amount of word-order variation in spoken production on a speaker-level with the speaker's ability to discriminate sentences with different word orders (e.g., "he kicked the dog out" vs "he kicked out the dog"). We find a correlation between production and perception of variation. We argue that the variation is neither semantically nor stylistically motivated, but a result of genuinely underspecified grammars. Still, some speakers show rigid behavior both in production and perception, suggesting that regularisation processes takes place during acquisition rather than through usage.

Fast Talkers Seem More Proficient But Might Just Be Cognitively Sharper

Dalia Garcia^{1,2} & Tamar Gollan¹

¹University of California, San Diego

²San Diego State University

What makes a proficient language speaker? We examined this with Oral Proficiency Interviews in 21 older Spanish-English bilinguals who also completed a picture naming test in both languages, and a test of general cognitive functioning in the dominant language. Participants spoke for 6-7 minutes in each language and interviews were rated on a 1-10 proficiency scale. Speakers with higher cognitive functioning scores were rated as more proficient and talked faster in both languages. But aside from cognitive functioning and speaking speed, different sub-measures were associated with higher proficiency scores in each language. In the nondominant language, speakers had lower naming scores, produced fewer different words, spoke more slowly, spoke less, and speakers with very low proficiency level also used simpler syntactic structures. Surprisingly, speech errors had no effect on proficiency scores in either language. However, in the dominant language, small differences in proficiency level were related to problems with speech planning (hesitations, repetitions, and revisions). Faster speech was most consistently associated with higher rated proficiency level. However, the fastest talkers (in the dominant language) may incur costs in planning that compromise apparent proficiency level, and talking speed may reflect general cognitive abilities rather than linguistic knowledge per se.

Discourse Accessibility in Tagalog Syntactic Choice: A Sentence Production Study

Norielle Adricula^{1 2}

¹University of Colorado, Boulder

²University of Cologne, Collaborative Research Center 1252

Despite purported morphosyntactic symmetry between Tagalog Actor and Undergoer voice constructions, ample linguistic and psycholinguistic evidence demonstrates that Tagalog speakers generally prefer to use the Undergoer Voice to describe transitive events even when an Actor may be higher on accessibility features like animacy. This suggests a complex thematic role-grammatical function mapping process whereby assigning Undergoers to the highest grammatical function is the default, but Actors are highly constrained. We investigate this mapping process by manipulating the discourse accessibility of Actors and Undergoers in a story-plus-picture description task with Tagalog-English bilingual speakers living in the United States. We hypothesize that relative discourse accessibility (operationalized as givenness and topicality) between Actors and Undergoers influences syntactic choice such that higher discourse accessibility Actors increase the likelihood of the Actor voice. Preliminary results (12 participants, 432 item responses) suggest that speakers prefer the Undergoer voice (78% of responses) compared to the Actor Voice (20%). However, speakers produce more Actor Voice structures when Actors are more discourse accessible (24%) compared to when they are less so (16%). This work confirms prior research showing a strong default mapping between Undergoers and the highest grammatical function; however, this mapping may be modulated by an Actor's discourse accessibility.

Effects of clause order and connective type on children's production of adverbial clauses

Shijie Zhang¹, Silke Brandt² & Anna Theakston¹

¹Division of Psychology, Communication and Human Neuroscience, University of Manchester, Manchester, UK

²Department of Linguistics and English Language, Lancaster University, Lancaster, UK

In English, adverbial clauses can occur in two orders: main-subordinate and subordinate-main (e.g., (1) He eats a pear after he plays the drum; (2) After he plays the drum, he eats a pear.). However, the two orders are not processed equally. Three competing theoretical accounts have suggested that one order may be easier to produce than the other from semantic, syntactic, and frequency-based perspectives. The present study tests these competing predictions using a sentence completion task in which clause order and connective type (after, before, because, if) are manipulated. Preliminary results show that three- to five-year-old monolingual English-speaking children complete sentences in which the clause order follows the chronological order of events in the real world (example (2) above) more accurately than sentences where the clauses appear in the reverse order to which the events occur in the real world (example (1) above). These findings suggest that young children construct complex adverbial sentences by assuming a direct mapping between the order of events in the real world and in the linguistic form. We will present full datasets across three age groups (80 three- to five-year-olds; 20 seven- to nine-year-olds; 20 adults) and discuss the theoretical implications of the results.

Lexical Alignment in Bilinguals

Diana Uribe¹, Anahy Barragan-Diaz¹, Ivanna Delgado¹ & Iva Ivanova¹

¹The University of Texas at El Paso

Lexical alignment is speakers' tendency to reuse the words of their interlocutor. In the Interactive Alignment theory (Pickering & Garrod, 2004), alignment typically comes from an automatic process, implying that lexical access will be faster for aligned responses. We hypothesize that alignment does not always facilitate production because it creates lexical competition when the interlocutor's word choice does not match the speaker's preferred word. In this study, Spanish-English bilinguals named and matched pictures with a confederate in Spanish. On critical trials, participants named pictures of objects which were previously named by the confederate with one of two possible names (e.g., chaqueta or chamarra [Sp. jacket]). Pilot results showed that, as expected, latencies were slower when participants aligned to alternative names than when they aligned to their preferred names (which were established in a preliminary session). But when participants did not align and stuck instead with their preferred name, latencies were even slower. This implies – contra our hypothesis – that alignment facilitates language production even in the face of lexical competition. Furthermore, participants with lower Spanish proficiency showed numerically greater alignment, suggesting that alignment may mitigate the production difficulties associated with lower proficiency.

Multilingualism does not affect time reference production in L1: Evidence from academics

Valantis Fyndanis^{1,2}, Sarah Cameron², Giorgio Arcara³, Nina Hagen Kaldhol^{4,2}, Monica I. Norvik^{2,5} & Hanne Gram Simonsen²

¹Cyprus University of Technology, Limassol, Cyprus

²University of Oslo, Oslo, Norway

³San Camillo IRCCS SRL, Lido/Venice, Italy

⁴University of California San Diego, USA; ⁵Statped, Oslo, Norway

Little is known about the impact of bi-/multilingualism on L1 morphosyntactic/morphosemantic production. Given the coactivation of lexical representations encoding specific morphosyntactic/morphosemantic features (e.g., past reference) in bi-/multilinguals, one could presume that amount of use and proficiency level in their L2/foreign languages might modulate the activation level of lexical representations and the strength of the competition between them in morphosyntactic/morphosemantic tasks. Number of known languages could also matter, as proficiency in several languages should increase lexical competition due to the larger number of activated lexical representations. This study investigates the effect of sequential bi-/multilingualism on L1 time reference production (L1TRP). Seventy-five neurotypical middle-aged and older academics completed a language background questionnaire, and orally performed a transformational sentence completion task tapping production of past and future reference in L1 Norwegian. Reaction Time (RT) was the dependent variable. We considered 23 bi-/multilingualism-related variables. Since the future reference condition elicited longer RTs than the past reference condition, linear mixed-effect models including predictor variables with acceptable Variance Inflation Factors were fitted not only to the whole dataset, but also to its two subsets. None of the bi-/multilingualism-related variables showed main effects in any of the three datasets, suggesting that bi-/multilingualism does not affect L1TRP.

Electrophysiological responses associated with character amnesia in Chinese handwriting

Xufeng Duan¹, Zhenguang Cai^{1,2} & Bo Yao³

¹Department of Linguistics and modern languages, The Chinese University of Hong Kong

²Brain and Mind Institute, The Chinese University of Hong Kong

³Department of Psychology, Fylde College, Lancaster University

Chinese is opaque between pronunciation and spelling; as a result, people may fail to write down a character even though they know how to pronounce it, a phenomenon known as character amnesia. It remains unclear what causes character amnesia in the brain. This study presents the first attempt to record electrophysiological responses associated with character amnesia. The primary objective of this research is to explore the neural mechanisms responsible for character amnesia. A total of 40 graduate students participated in an EEG experiment. During each trial, participants were required to complete a spelling-to-dictation task and write down the target characters (e.g., 辣椒嘅辣) two seconds after the end of the phrase. These characters were chosen because they are more likely to trigger Character Amnesia states. The results revealed a significant increase in neural oscillations within the theta band (4-8 Hz) during character amnesic states. Theta activation is known for its involvement in top-down cognitive control, sustained attention, and memory processing. This study's findings indicate a strong correlation between elevated theta neural oscillations and difficulties in orthographic access during character amnesia. Consequently, these insights contribute to a more comprehensive understanding of the neural mechanisms underlying character amnesia.

Direct retrieval of orthographic representations in Chinese handwritten production: Evidence from a dynamic causal modelling study

Jieying He¹ & Qingfang Zhang²

¹ Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands

² Department of Psychology, Renmin University of China, Beijing, China

Writing is an important way to communicate in everyday life because it can convey information over time and space, but its neural substrates remain poorly known. The present functional magnetic resonance imaging study identified an optimal model representing the relationship between orthography and phonology in Chinese handwritten production using dynamic causal modelling, and further explored how this model was modulated by word frequency and syllable frequency. Three tasks were designed: writing, speaking plus drawing, and watching plus drawing. Word frequency (high, low) and syllable frequency (high, low) of the picture names were manipulated. Each model contained five volumes of interest in the left hemisphere (inferior frontal gyrus/IFG, middle frontal gyrus/MFG, angular gyrus/AG, supramarginal gyrus/SMG, and superior frontal gyrus/SFG), with the IFG as driven input area. Results showed the superiority of a model in which both the MFG and the AG connected with the IFG, supporting the orthography autonomy hypothesis. Word frequency modulated the AG→SFG connection (information flow from the orthographic lexicon to the orthographic buffer) and syllable frequency affected the IFG→MFG connection (information transmission from the semantic system to the phonological lexicon). This study thus provides new insights into the connectivity architecture of neural substrates involved in writing.

Predicting picture naming scores from self-report questions: A little immersion goes a long way, and self-rated proficiency matters more than percent use

Anne Neveu¹ & Tamar H. Gollan¹

¹ University of California, San Diego

Language proficiency is critical to consider when conducting research on bilinguals, but researchers disagree on its measurement. Whereas the gold standard might involve e.g. a proficiency interview, much less cumbersome, validated and objective measures have been developed (e.g. the Multilingual Naming Test – MINT). Even so, many investigators do not use these and rely exclusively on brief and subjective self-report measures. Here, we conduct multivariate statistical analyses to determine how well self-report measures predict MINT scores. Experiment 1 compared 37 English-dominant to 32 Spanish-dominant older bilinguals, and Experiment 2 compared 84 young to 42 proficiency-matched older Spanish-English bilinguals. In both experiments, self-rated proficiency was a powerful but flawed predictor, and when combined with immersion years, better predicted naming scores, while percent use explained little or no unique variance. Self-rated proficiency was systematically biased: Spanish-dominant bilinguals rated themselves more strictly at the same levels of objective proficiency as English-dominant bilinguals. Immersion years affected young more than older bilinguals, and non-immersed (English-dominant) more than immersed (Spanish-dominant) bilinguals, especially in bilinguals with few immersion years. These results demonstrate how self-report questions can produce spurious results, that combining multiple self-report questions will improve predictive power, and suggest possible avenues for improving self-report questionnaires.

Does egonet structure modulate linguistic priming?

Kerime Eylul Eski¹ & Luca Onnis¹

¹University of Genova

²University of Oslo

Does language spread primarily as a virus or as a form of complex behavioural contagion? Simple behavioural contagion is analogous to biological contagion of a virus, whereby a single contact is sufficient to adopt a given behaviour. In contrast, complex behavioural contagion is the process in which multiple sources of exposure/contact are required to acquire a behaviour. We manipulate simple and complex language contagion in a language priming experiment. In one of two conditions (egonet-1 vs egonet-5) adult participants take turns with six other players (confederates) in a picture description game. We measure the degree to which participants are implicitly primed for syntactic structures that alternate in English (active/passive voice, and dative constructions). Crucially, in the egonet-1 condition, subjects are primed by a single confederate, while in the egonet-5 condition, the very same priming sentences are distributed among five different confederates. The cumulative number of priming sentences is equal in both conditions. If structural priming spreads via complex contagion, the egonet-5 condition should promote a higher mean proportion of primed grammatical structure, compared to the egonet-1 condition. The experiment is ongoing and preregistered. This research helps establish a much-needed connection between individual and social mechanisms of language use.

How readers process verbal and pictorial information in multimodal texts: a review of eye-tracking studies past 10 years

Anastasiia Konovalova ¹

¹ St Petersburg University, Russian Federation

In addition to the three main approaches for investigating multimodality (Jewitt, 2009), a cognitive approach has emerged (Holsanova, 2014) that focuses on researching the reception of multimodal texts using experimental methods such as eye-tracking and verbal protocols. This approach aims to understand how users read multimodal texts. Of particular interest is how users integrate verbal and pictorial information when reading multimodal texts of different genres, as successful integration of verbal and pictorial information is crucial for comprehension of a multimodal material. This question has been explored by researchers in educational sciences, linguistics, psychology, and marketing over the past decade. This study aims to review the literature on verbal and pictorial information processing in multimodal texts of different genres using eye tracking methods over the past 10 years. Overall, the studies suggest that both verbal and pictorial elements are important for processing multimodal texts, but their salience, relevance, and format influence how readers allocate their attention. Schüler (2017) concluded that learners try to construct a coherent mental representation that incorporates information from both text and picture while processing multimedia materials, which may be applicable to all genres of multimodal texts.

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The effect of contextual informativity on collocation learning and retention

Inés de la Viña¹, Christina Kim¹ & Gloria Chamorro²

¹University of Kent

²Universidad Nacional de Educación a Distancia (UNED)

Collocations, while critical to L2 learners achieving native-like proficiency, pose a challenge due to the combined learning burden of form cooccurrence and non-compositional meaning: beyond associating form with meaning, knowledge of collocations requires understanding their usage in context. While contextual informativity may aid learning by facilitating meaning inference from linguistic environments (Nation, 2001), it may not have a net positive effect: the processing effort required to infer meanings from unresponsive contexts may result in greater lexical retention (Haastrup, 1989), counteracting facilitation from responsive contexts. We investigated the effect of contextual informativity –measured by quality and quantity of responsive words– on collocation learning and retention. English learners (L1 Spanish, n=94) read texts featuring collocations like bone marrow, which differed by informativity (low/mid/high). Learning was assessed using form and meaning recall tests, immediately post-treatment and after 2 weeks. For form and meaning recall, mid-informativity predicted greater learning at immediate posttest and greater retention at delay than low-informativity contexts. High-informativity did not improve performance relative to low-/mid-informativity at either delay. This suggests that, while informativity can facilitate learning and retention, there is a trade-off between ease of meaning inference from responsive contexts and complexity from processing increased meaning associations in a given context.

**Belief of Speakers' Linguistic Competence Modulates the N400 Effect Elicited
by Inconsistent Lexical Use**

Hanlin Wu¹, Xufeng Duan¹ & Zhenguang Cai^{1 2}

¹Department of Linguistics and Modern Languages, The Chinese University of Hong Kong

²Brain and Mind Institute, The Chinese University of Hong Kong

During conversations, interlocutors expect consistent label usage for identical concepts (e.g., they would expect their interlocutors to use couch instead of sofa if couch has been used before). It is unclear whether this expectation is modulated by their interlocutor's linguistic competence. In this study, we used ERPs to investigate whether people anticipate lexical reuse to a greater extent from a linguistically less competent interlocutor. Forty-seven Mandarin speakers listened to either an adult or a child (in fact recordings) naming pictures and decided whether they saw the same picture as the named one. We used 80 pictures that have alternative labels in Mandarin (e.g., yi1sheng1 vs. dai4fu). Each picture was presented twice over two blocks. In Block 1, the adult/child interlocutor referred to the picture using a label; in Block 2, they either used the same label or switched to another label. ERPs revealed that, compared to repeated labels, switched labels elicited larger amplitude in N400 time window, suggesting participants anticipated label reuse. Critically, the effect was larger when listening to the child than adult, suggesting increased mental efforts for integrating the switched label. This study demonstrates that, during speech comprehension, listeners consider speakers' linguistic competence which dynamically modulates lexical processing.

Away from the edge: early automatic decomposition of morphologically complex words in Visual Word Form Area

Samantha Wray^{1,5}, Suhail Matar^{2,5}, Sherine Bou Dargham³, Linnaea Stockall^{4,5} & Alec Marantz^{3,5}

¹ Dartmouth College

² Basque Center on Cognition, Brain and Language

³ New York University Abu Dhabi

⁴ Queen Mary University of London; ⁵ New York University

The first stage of word reading is characterized by form-based, semantically-blind exhaustive parsing into a word's constituent morphemes. Models of this phenomenon appeal to contiguous stems bordered by contiguous affixes (Grainger & Beyersmann, 2017), and experimental evidence shows this process is sensitive to the relationship between frequency of the stem and the whole word, formalized as stem-to-word transition probability (TP). However, most of the experimental work focuses on languages with fully contiguous stems which may appear in isolation and with affixes that are adjacent to the edge of the word. Building from previous work that demonstrates early automatic decomposition of morphologically complex words is indexed by a correlation between TP and neural activity in the Visual Word Form Area in left-hemisphere Fusiform Gyrus (Solomyak and Marantz, 2010), we performed a lexical decision task with n=18 native speakers of Arabic while recording concurrent magnetoencephalography (MEG). Arabic, with its root-pattern morphology, has words composed of noncontiguous morphemes. Results from regression-based spatiotemporal cluster tests on source-estimated MEG data showed significant correlation between activity and TP. These results are consistent with down-to-the-root parsing for Arabic words (Boudelaa & Marslen-Wilson 2013), and demonstrate continued relevance of lexicon-wide properties such as morpheme frequency despite noncontiguous morphology.

The role of tone in lexical access

Zifeng Liu ^{1,2}, Ioana Chitoran ^{1,2} & Giuseppina Turco ^{1,3}

¹ Université Paris Cité, France

² Clillac-ARP, France

³ CNRS Laboratoire de Linguistique Formelle, France

Contrastive units constrain lexical selection differently. In several languages, participants reconstructed words more easily when vowels were substituted (aka “Consonant-bias”) (Cutler et al., 2000; Nazzi & Cutler, 2019; Van Ooijen, 1996). A reverse trend was reported in Danish, Mandarin, and Cantonese, suggesting that Consonant-bias could be language-specific (Chen et al., 2021; Wiener & Turnbull, 2016). Fewer studies explored the role of lexical tones in word recognition, and the weight of each contrastive unit (i.e., vowel, consonant, tone) in lexical processing of a tone language is still unclear. In our study, we propose a number reconstruction task to address this question in Mandarin. Participants heard a sequence of numbers, in which one was altered to be a non-number. They were asked to identify which number that was, originally. The altered form was created by substituting either vowel, consonant, or tone of a number. Consistent with previous literature on tonal languages, Mandarin participants reconstructed the original number most easily when the consonant was substituted (aka “Vowel-bias”), suggesting that vowels are the most informative unit for lexical processing. Contrary to our expectations, participants performed worse when tone rather than consonant was substituted, implying a more important role of tone in constraining lexical selection.

German demonstrative pronouns in contrast

Derya Cokal¹, Robert Voigt¹ & Klaus von Heusinger¹

¹University of Cologne, Germany

German has two demonstrative pronouns, the short form (e.g., *der*) and the long form (e.g., *dieser*). In previous studies, such pronouns contrast in their anaphoric use with personal pronouns (*er*) and refer to less prominent antecedents. However, we predicted the use of short form (*der*) and its antecedent selection additionally depends on contrast. In our eye-tracking reading Experiment, we utilized a 2x2 design crossing context type (contrast vs. no-contrast) with d-pronouns (*der* vs. *dieser*) and manipulated the explicit contrast as in [1a] and non-contrast contexts as in [1b]. Our results showed a two-way significant interaction between context and d-pronouns in second pass and regression path times in the disambiguation and adverbial regions. The use of the demonstrative *der* in the contrast context as in [1a] is processed faster than *der* in the non-contrast context [1b]. Unlike previous literature assumption, *dieser* can refer to the topic of a sentence.

(1a) The electrician, in contrast to the roofer, started very early. Yesterday, after the first two cigarettes,

Der/Dieser the electrical panel carefully checked ...

(1b) The electrician, together with the roofer, started very early. Yesterday, after the first two cigarettes,

Der/Dieser the electrical panel carefully checked...

Reversing the Word Order of Collocations

Wanyin Li¹, Bene Bassetti^{1,2} & Steven Frisson¹

¹University of Birmingham

²University of Modena and Reggio Emilia

Collocations, defined as frequently co-occurring words, have shown a faster processing advantage over free combinations in L1 and L2 speakers. This collocation advantage is mainly observed for canonical configurations (e.g., “provide information”). However, contextual predictability is not controlled for. Additionally, collocations can also occur in variation configurations (e.g., “provide some of the information”). These variation collocations still show a processing advantage in L1 speakers but not in L2 speakers, which may indicate that L2 speakers process non-canonical collocations differently from L1 speakers. The present eye-tracking reading experiment investigates whether the collocation advantage retains when the word order of canonical collocations is reversed (reversed collocation: “information was provided”), whether collocation advantage is separate from contextual predictability, and whether reversing word order affects L1 and L2 speakers differently. Generalised mixed models revealed that reversing the word order of collocations did not eliminate the collocation advantage in either L1 or L2 speakers. The collocation advantage retained when strictly controlled contextual predictability, but it was more consistent in late than early reading measures. This study provided initial evidence that advanced L2 speakers process non-canonical collocations with modified word order in a qualitatively similar manner to L1 speakers.

**Seeing affixes everywhere: Position-Independent Recognition of Tagalog
Infixes**

Dave Kenneth Cayado¹, Samantha Wray² & Linnaea Stockall¹

¹Department of Linguistics, Queen Mary University of London

²Department of Linguistics, Dartmouth College

Previous studies have shown that affixes are recognized in a position-specific manner, while stems are identified in a position-independent manner since stems can appear in different linear positions (Crepaldi et al., 2013, 2015). Using the visual masked affix priming paradigm, we investigated whether Tagalog affixes that can appear in different linear positions are recognized in a position-independent fashion. Experiment 1 revealed robust priming effects of similar magnitude for word pairs sharing the same <in> infix (e.g., tinawag-BINULAG ‘called-BLINDED’, estimate=15.33ms, p=0.0372), <um> infix (e.g., sumayaw-TUMAPAK ‘danced-STEPPED’, estimate=15.49ms, p=0.0379), and <in> infix when attached to glottal stop-initial stems, thereby orthographically appearing in the prefix position (e.g., inayos-INUBOS ‘fixed-FINISHED’, estimate=20.08ms, p=0.0069). No such effects were found for word pairs sharing non-morphological orthographic overlap (estimate=-2.04ms, p=0.7924). Experiment 2 showed robust priming effects for word pairs sharing the same affix in different linear positions (e.g., inawit-SINAMA ‘sang-JOINED’, estimate=20.34, p=0.0152), while no such effects were observed for orthographic controls (estimate=5.32ms, p=0.4407). Our findings suggest that infixes get activated during visual word recognition, despite not being edge-aligned, contra Beyersmann and Grainger’s Word and Affix model (2023). Finally, we provide evidence that affixes appearing in different linear positions are recognized in a position-independent manner during early morphological processing.

Use of L1 lexical overlap in initial foreign-language speech segmentation

Katie Von Holzen¹, Marie Schnieders¹ & Holger Hopp¹

¹English and American Studies, TU Braunschweig

Adults initially struggle to segment word forms from continuous speech in a foreign language (FL), but do better when words partially overlap in form and meaning with their L1 equivalents (i.e. cognates: English: /kraʊn/; German: /kro:nə/; noncognate: English: /skin/; German: /haʊt/; Shoemaker & Rast, 2013). We examine whether L1 lexical overlap facilitates the segmentation of English speech among German 1st and 2nd graders before they receive instruction in English. English-German cognate and noncognate word pairs (n = 160) were embedded into an English sentence frame (She reduced her crownC/skinNC mursk to poverty). Students listened to the sentence followed by an isolated probe-word and indicated via button press whether they heard the probe word in the sentence. A general-linear-mixed-model on 45 1st and 2nd graders revealed above-chance performance for all target words (p 's < .0001), indicating students detected and segmented the target words. D-primes were not significantly different between cognate and non-cognate words ($p = .19$; Figure 1), suggesting that these young students do not yet transfer knowledge from their L1 to segment words in an unknown FL. In the full sample, we will also examine the role of individual differences in L1 knowledge and phonological awareness.

Native-Like L2 Morphological Processing of English Derived Words: An ERP Study

Jonah Lack¹, Sui Lung Sze¹ & Yoonsang Song¹

¹The University of Hong Kong

This study investigates L2 processing of English derived words to examine the role of morphology in L2 lexical processing. During an overt visual priming experiment, we recorded EEG signals from highly advanced L1 Cantonese English speakers (n = 9) and L1 English speakers (n = 20), testing priming to three different types of prime-target pairs: morphologically related (swiftly-swift), only semantically related (explode-burst), and only orthographically related pairs (surgeon-surge). L1 ERP analysis showed distinct processing patterns for each type of prime-target pair, suggesting that morphology, semantics, and orthography affect lexical processing in different ways. Morphological priming occurred as an attenuated N250 (250-350ms) and N400 (350-550ms). Orthographic priming occurred as an attenuated N250 and a shorter, less attenuated N400 (350-500ms) compared to morphological priming. Orthographic priming yielded an inhibitory effect in the form of a late anterior negativity (LAN) (450-650ms). Semantic priming only occurred as an attenuated N400 (350-550ms) and was weaker than the morphological priming effect. L2 learners replicated these distinct processing patterns, with some quantitative differences: Their N400 and LAN effects were delayed and shorter-lived (400-600ms and 600-800ms, respectively). These results suggest that advanced L2 derived word processing mainly relies on morphology, not over-relying on semantic or orthographic information.

Processing Turkish case markers: Frequency vs morphosyntactic complexity

Metehan Oğuz¹ & Elsi Kaiser¹

¹University of Southern California

Despite the large literature on word processing, the morphological processing of case-marked NPs is under-researched. We investigate the processing of accusative-marked NPs in Turkish, compared to genitive and locative-marked NPs. More frequent suffixes in complex words elicit faster lexical-decision RTs than less frequent suffixes (e.g. Ford et al, 2010). Since accusative suffixes are less frequent than genitive and locative in Turkish (Sezer&Sezer, 2013), this predicts accusative-marked NPs to be processed slower than genitive/locative-marked NPs. A competing prediction is made by the Case Containment Hypothesis (CCH, e.g. Caha 2009), which proposes that genitive and locative are morphosyntactically more complex than accusative. Under CCH analyses, the Turkish genitive suffix -In consists of two suffixes: accusative -I and genitive -n. Like genitive, the locative suffix consists of two morphemes (accusative+locative) in some morphological contexts, under this analysis. Thus, the CCH predicts that Turkish genitive and locative-marked NPs are morphologically more complex than accusative-marked NPs, and should be processed slower (the opposite of what frequency predicts). Results from a lexical-decision task (151 participants) show that accusative-marked NPs, despite being less frequent, are processed faster than genitive and locative-marked NPs ($p < .05$). This provides the first experimental evidence for the CCH, and challenges purely frequency-based accounts.

The development on early phonological networks: An analysis of individual longitudinal vocabulary growth

Judith Kalinowski^{1,2,3}, Laura Pede^{4,5}, Michaela Vystrcilova^{4,5}, Alexander Ecker^{2,4} & Nivedita Mani^{1,2}

¹ Psychology of Language Research Group, University of Göttingen

² Leibniz-ScienceCampus Primate Cognition

³ RTG 2636 Form-meaning mismatches

⁴ Research Group Neural Data Science, University of Göttingen

⁵ shared second author

The vocabulary of individual children must be analyzed over time to investigate the influence of already learned words on the acquisition of new and phonologically similar words, as children learn in different ways. Previous research used networks to represent children's vocabulary which are based on data averaged over many children, or only a few individual children. Further, different measurements for phonological distance were used, which could explain the conflicting results: Fourtassi et al. (2020) showed that words that have many phonologically similar words in the children's linguistic environment are more likely to be learned early than words which do not (EXT). Laing (2022) found that children learn words first which connect to already learned and well connected words in the child's lexicon (INT). Siew & Vitevitch (2020) found that INT and EXT are significant predictors of word-learning. The present work addresses the problem regarding different (non-longitudinal) data and phonological distances. We use a large longitudinal dataset of 1,565 Norwegian children and measure the Levenshtein distance. Results show that INT and EXT are significant predictors for vocabulary growth. We verify the outcome against two other measurements of phonological distance, namely the one developed by Laing (2022) and our own method.

Cortical Tracking of Native and Non-native Speech by Monolingual and Bilingual Four-month-old Infants

Giulia Mornati¹, Nicola Molinaro^{1,2}, Marie Lallier¹, Manuel Carreiras^{1,2,3} & Marina Kalashnikova^{1,2}

¹ Basque Center on Cognition, Brain and Language (BCBL), San Sebastian, Spain

² Ikerbasque, Basque Foundation for Science, Bilbao, Spain

³ University of the Basque Country, Bilbao, Spain

Infants rely on prosodic information to differentiate their native language from other languages and to start segmenting native speech. This study investigated cortical tracking of speech - a neural mechanism potentially underlying this early ability. Cortical tracking refers to the synchronization between endogenous neural oscillations and the amplitude information in the speech envelope. We were specifically interested in tracking low-frequency prosodic information (at the delta band/phrasal rate, 0-3,5Hz, and the theta band/syllable rate, 4-8Hz). Thirty-three four-month-old infants, acquiring Spanish and/or Basque in a bilingual community, listened to three prerecorded stories in Spanish, Basque (both syllable-timed languages familiar to infants) and English (unfamiliar stress-timed language), while their neural activity was recorded using continuous electroencephalography (EEG). Speech-brain coherence analyses showed a main effect of stimulus language for both delta and theta bands: coherence was higher for English than Basque ($p < 0.04$). Coherence was not related to individual levels of bilingual exposure. These results indicate different neural processing of familiar and unfamiliar languages in four-month-old infants. Furthermore, greater tracking of low-frequency prosodic information in the unfamiliar than familiar languages suggests that four-month-olds may be already transitioning from a low-level acoustic to a higher-level linguistic processing mode for their native language or languages.

The relation of home literacy environment to brain specialization for phonological and semantic processing

Anna Banaszekiewicz^{1,2}, Alisha B. Compton¹, Jin Wang³ & James R. Booth¹

¹Department of Psychology and Human Development, Vanderbilt University, Nashville, TN, USA

²Nencki Institute of Experimental Biology, Polish Academy of Sciences, Warsaw, Poland

³Graduate School of Education, Harvard University, Cambridge, MA, USA

A stimulating learning environment supports development of a child's cognitive abilities. The aim of our study was to examine the relation between home literacy environment (HLE) and specialization for phonological and semantic language processing in 7-8-year-old children. Seventy-six participants underwent a functional magnetic resonance imaging session, performing sound judgment and meaning judgment tasks. Voxel-wise regression analyses for phonological specialization (sound vs meaning judgment) and semantic specialization (meaning vs sound judgment) with HLE measured as frequency with which family members read to a child, included as a covariate of interest, did not reveal brain-behavior correlations. Voxel-wise regression analyses for parametric effects revealed a correlation within the meaning judgement task. Specifically, HLE was positively correlated with the difference in the level of functional activation for weak (difficult condition) vs strong (easy condition) semantic association words in the left middle temporal gyrus (MTG). Analyses were controlled for task performance, socioeconomic status, and age, included as nuisance covariates. In conclusion, we did not find an association between the strength of language specialization and HLE. However, children with a higher HLE score engaged semantic representations to a greater degree within the left MTG to perform the harder condition in the meaning judgment task.

An Improved Multilingual Approach for Presurgical Mapping of Glioma Patients

Ileana Quiñones¹, Sandra Gisbert^{1,2}, Lucia Amoruso^{1,3,4}, Lucia Manso-Ortega^{1,2}, Santiago Gil-Robles^{5,6}, Iñigo Pomposo^{6,7}, Garazi Bermudez^{6,7} & Manuel Carreiras^{1,2,3}

¹ BCBL, Basque Center of Cognition, Brain and Language, Donostia-San Sebastian, Spain

² University of the Basque Country

³ IKERBASQUE. Basque Foundation for Science, Bilbao, Spain

⁴ Cognitive Neuroscience Center (CNC), University of San Andres, Buenos Aires, Argentina

⁵ Universitary Hospital Quironsalud Madrid, Madrid, Spain

⁶ BioCruces Research Institute, Bilbao, Spain

⁷ Universitary Hospital Cruces, Bilbao, Spain

Is there a neural network common to all languages spoken by a multilingual person? fMRI studies with healthy individuals provide inconsistent findings: some suggest a neural overlap across languages, while others contradict this claim. Answering this question is critical when planning the surgical treatment of bilingual brain tumor patients. We tested 10 highly proficient Spanish-Basque bilingual patients with gliomas affecting the language-dominant hemisphere and a group of healthy controls. Results from healthy participants reconcile with previous evidence showing a common system for L1 and L2, but also regions that respond differently in terms of language-dependent activation and lateralization patterns. The left lateralization shown by L1 is not as evident when we map the L2: L2 needs the recruitment of regions contralateral to the language-dominant hemisphere. Conversely, patients show a bilateral pattern for L1 and L2 suggesting that the compensatory engagement of contralateral networks is required to preserve bilingual speech production. These findings support the implementation of personalized surgical strategies that consider patients' linguistic profiles to preserve language function in an integral multilingual fashion.

A time-frequency investigation of native, dialectal and foreign accent processing

Trisha Thomas^{1,2}, Irene Bernardi³, Clara D. Martin^{1,4} & Sendy Caffarra^{1,5,6}

¹Basque Center on Cognition, Brain and Language (BCBL)

²UPV

³University of Padova

⁴Ikerbasque

⁵University of Modena and Reggio Emilia

⁶Stanford University

Previous studies show that there are differences in native and foreign speech processing, while mixed evidence has been found regarding dialectal vs. foreign accent processing. The Perceptual Distance Hypothesis states that dialectal accent processing is an attenuated version of foreign. Conversely, the Different Processes Hypothesis argues that foreign and dialectal accent processing are qualitatively different. A recent study looking at single-word EEG data suggested flexibility in processing mechanisms. The present study deepens this investigation by addressing in which frequency bands native, dialectal and foreign accent processing differ during extended listening. Electroencephalographic data was recorded from 30 participants who listened to dialogues of six minutes spoken in native, dialectal and foreign accents. Power spectral density estimation (1-35 hz) was performed. Results support both hypotheses depending on the level of linguistic analysis. Frequency ranges associated with phoneme processing show a difference between native and other accents, while frequency ranges of syllable processing show differences between all three accents. Finally, in frequencies associated with prosodic processing a binary native non-native processing differential is found, where foreign accent is processed differently than native and dialectal accents. Findings support that the way the brain treats accents depends on the level of language analysis considered.

Electrophysiological study of visual statistical learning in pre-school ASD children

Marine Petit^{1 2 3} & Arnaud Destrebecqz^{1 3}

¹Université Libre de Bruxelles

²Autisme en Contexte Theorie et Experience (ACTE)

³Center for Research in Cognition & Neurosciences (CRCN)

There is a growing research interest in tracking individual performance in statistical learning tasks, primarily as a predictor of linguistic abilities. This is of particular importance in the field of autism, as approximately 30% of individuals with autism spectrum disorder (ASD) will not develop language over the course of their development. In this study, we investigated the electrophysiological correlates of visual statistical learning in young children with ASD using an event-related potential sequence learning paradigm. The experimental paradigm is a modified version of the task developed by Jeste et al. (2015) in which children view a centrally presented sequence of little monsters composed of the random presentation of three pairs of items. On 10% of the trials, the predicted little monster is replaced by another to constitute the oddball condition. We will compare 50 children with ASD and 50 typically developing children. Based on Jeste et al. (2015), (1) we expect an increased in the N1 component: we should find a larger response in the « expected » condition compared to the oddball condition. (2) We expect a larger P300 component in the oddball condition. (3) We should find a larger Nc component in the « expected » condition than in the oddball condition.

Rethinking the role of the right hemisphere: Intraoperative mapping of social abilities in awake patients undergoing surgery for right-sided lesions

Laura de Frutos-Sagastuy¹, Ileana Quiñones¹,

Santiago Gil-Robles^{3 4}, Iñigo Pomposo⁵, Garazi Bermudez⁵, Manuel Carreiras^{1 3} & Lucia Amoruso^{1 2 3}

¹Basque Center on Cognition, Brain and Language (BCBL), San Sebastian - Donostia, Spain

²Cognitive Neuroscience Center (CNC), University of San Andres, Argentina

³Ikerbasque, Basque Foundation for Science, Bilbao, Spain;

⁴Hospital Quirón, Madrid, Spain

⁵BioCruces Research Institute, Bilbao, Spain

The fronto-parietal Action Observation Network (AON) plays a critical role in our ability to understand other people's actions. Damage to this network can result in maladaptive social behaviors, highlighting the need for its preservation during intraoperative mapping for glioma resection. However, no team has yet developed a cognitive task that allows mapping the AON during awake brain surgery. Here, we use fMRI to validate an action observation task requiring participants to watch incomplete actions performed by others and infer the underlying motor intention. In healthy individuals, the task accurately mapped bilateral AON regions. During intraoperative mapping of right AON hubs in patients with frontal and parietal gliomas, the combination of this task with direct cortical stimulation (DES), successfully identified positive sites at cortical (e.g., IFG) and subcortical levels (e.g., SLF II). Our findings show that, although challenging, developing tools to map social cognition in the right hemisphere can enhance the precision of awake brain surgery, potentially reducing postoperative deficits in social abilities.

Electrophysiological correlates of semantic integration of taboo words in natural and synthesized speech in the context of bilingualism

Justyna Gruszecka¹, Katarzyna Jankowiak¹ & Rafał Jończyk¹

¹Adam Mickiewicz University, Poznań

Electroencephalography (EEG) has been previously employed in research on synthesized speech (Maki, 2018) as well as on emotion-laden speech processing (Grass, 2016); yet, it remains to be tested if and how these two factors interact with each other. The present EEG study examined the processing of taboo and neutral words when presented in natural and synthesized speech in the native (L1) and second (L2) language. 30 proficient and unbalanced Polish-English bilinguals were auditorily presented with 72 taboo and 72 neutral words in Polish, and 72 taboo and 72 neutral words in English. Languages were blocked; block order was counterbalanced across participants. Words were played in either natural or synthesized speech (we opted for a male voice in both cases). We found more positive amplitudes of Late Positive Complex (LPC) for taboo than neutral words, suggesting more attention allocation to the arousing nature of taboo as compared to neutral words. LPC also increased in amplitude in response to L2 words as compared to L1 words, which supports prior findings indicating that processing a second and less dominant language is more cognitively taxing.

Decoding bilingual experience from resting-state MEG networks

Lucia Amoroso^{1 2}, Ileana Quiñones¹, Adolfo M. Garcia^{2 4 5} & Manuel Carreiras^{1 3}

¹ Basque Center on Cognition, Brain and Language (BCBL), Spain

² Cognitive Neuroscience Center (CNC), University of San Andres, Argentina

³ Ikerbasque, Basque Foundation for Science, Spain

⁴ Global Brain Health Institute (GBHI), University of California San Francisco, United States

⁵ Departamento de Lingüística y Literatura, Facultad de Humanidades, Universidad de Santiago de Chile, Santiago, Chile

Bilingual experience is known to shape resting-state connectivity, especially along executive control and language networks. However, little is known about the topological and frequency-specific signatures of this effect, precluding the integration of neurocognitive models of bilingualism and neuro-architectural accounts of experience-driven plasticity. To bridge this gap, we recorded resting-state MEG activity in early highly proficient and late low proficient Spanish-Basque bilinguals and calculated topological network properties using graph analysis at canonical frequency bands. These features were jointly fed into a machine learning classifier to establish how robustly they discriminated between individuals. The multi-feature model showed excellent classification (~90%) between individuals in each group, mainly driven by the average node strength in delta (2-4 Hz) and beta (15-30 Hz) networks. These effects spanned fronto-parietal and temporal hubs implicated in executive and linguistic processing. Complementary evidence from a multiple regression analysis showed that the top-ranked features better discriminating individuals during rest were also the most predictive of second-language proficiency and age of appropriation, further supporting the robustness of the ML results. These findings suggest that lifelong contact with two languages shapes the organization of brain networks consistently across subjects, underscoring the importance of individual-level, fine-grained signatures to better capture dual-language effects.

A novel method for detecting onsets of experimental effects in visual world eye-tracking

João Veríssimo¹ & Sol Lago²

¹University of Lisbon

²Goethe University Frankfurt

We propose a novel statistical method for comparing the onsets of experimental effects in visual world eye-tracking data. Existing approaches do not allow researchers to statistically compare the onset of differences between experimental conditions or participant groups, although this is often of psycholinguistic relevance. One solution to this problem was a bootstrap-based method that estimated onsets of divergences and their confidence intervals (Stone et al., 2020). However, this method lacked flexibility and its coverage was never assessed. We propose a new method based on generalized additive mixed models (GAMM) combined with Bayesian posterior simulations, which allows accommodating non-linear effects of time. We compared the coverage of both methods with simulated data. The GAMM-based method showed very good coverage (94-98% of the 95% CIs contained the true onset), while the bootstrap-based method performed poorly (only 0.04% of CIs contained the true onset). Additionally, we applied the GAMM-based method to three datasets of phonological, morphosyntactic, and semantic prediction. The method reliably detected differences between predictive onsets for different types of information. Since determining temporal onsets is informative to models of language processing, our method constitutes a valuable addition to the psycholinguistic analytical toolkit.

How grammatical gender agreement modulates the emergence of the missing V2 illusion in Hebrew

Edward Kishinevsky¹ & Aya Meltzer-Asscher¹

¹Tel-Aviv University

In three acceptability rating experiments in Hebrew, we examine the status of the Missing V2 grammaticality illusion, and whether its emergence is modulated by manipulating subject-verb grammatical gender agreement, testing the predictions of competing theories of working memory during sentence processing (Interference, Structural Forgetting, Language Experience). In experiment 1, we corroborate the existence of the illusion in Hebrew, comparing MV2 sentences (1) to full double center embedded sentences and sentences with missing V1 or V3. (1). *The result that the scientist that the virus had infected was published. In experiment 2, we use embedding to test a possible methodological problem with the classic MV2 experimental paradigm, namely that when the main verb is omitted, the result is a grammatical, semantically plausible complex NP. The results show participants did not, in fact, treat this condition as an NP. In experiment 3, we show that distinct grammatical gender marking on the second NP (2) evokes significantly diminished acceptability ratings compared to (1). (2). *The result-[MASC] that the scientist-[FEM] that the virus-[MASC] had infected-[MASC] was published-[MASC]. The results indicate that reduced interference due to no feature-matching competing subjects can reduce the grammaticality illusion observed in high-similarity, high-interference environments.

Pronoun Position Modulates Interference from Inappropriate Phrases During Antecedent Retrieval

Alba Jorquera Jiménez de Aberásturi¹, Dave Kush¹ & Jorge González Alonso^{2,3}

¹University of Toronto

²Universidad Nebrija

³UiT The Arctic University of Norway

Pronouns require feature-matching antecedents, but not all matching NPs are possible antecedents. In (1), the Spanish clitic ‘lo’ can take the referential ‘el niño’ as an antecedent. However, the quantificational NP (QP) ‘ningún niño’ cannot be the antecedent because it does not scope over the clitic. In two SPR experiments we find that grammatically inappropriate QPs can interfere with antecedent retrieval for preverbal clitics, but not post-verbal clitics. (1) Las profesoras que el/ningún niño (no) respeta lo quieren castigar. The teachers who the boy/no boy (does not) respect him want to punish. Both experiments manipulated gender-match between a QP/NP inside a relative clause and an clitic in the main clause. Gender-mismatch effects (GMMEs) were used as an index of retrieval. Test sentences were identical across experiments except that the clitic was pre-verbal in Exp 1 (N=92) and post-verbal in Exp 2 (N=80). We observed a significant GMME in QP conditions at the spillover region in Exp 1 ($t = 2.24$), but not in Exp 2, indicating that the QP was retrieved as an antecedent for a pre-verbal clitic. We discuss how to account for our effects in a system where scope is dynamically updated in response to bottom-up input.

Prominence relations between propositional and individual referents

Timo Buchholz ¹, Jet Hoek ² & Klaus von Heusinger ¹

¹Universität zu Köln, Cologne, Germany

²Radboud Universiteit, Nijmegen, the Netherlands

We investigate the hypothesis (commonly assumed but untested) that there is a relationship between the prominence of larger units (clauses/propositions) and that of the smaller units contained within them (individual referents). We conducted two German anaphor resolution experiments manipulating prominence at the clause level. In the first, participants chose which of two subject referents an ambiguous pronoun referred to in a continuation sentence, after being presented with a biclausal construction with a different subject in each clause. The second clause was (i) syntactically subordinate, with explicit causal connective *weil*, verb-final word order and separated by comma, (ii) syntactically coordinate with connective *denn*, V2-order and separated by comma, or (iii) syntactically coordinate without connective and separated by full stop. The second experiment used the same biclausal constructions but the continuation sentence contained a propositional anaphor that could refer to either the first clause, second clause or biclausal complex. Participants chose the referent of the propositional anaphor. In the results, conditions affect prominence relations between subject referents in Experiment 1 and propositional referents corresponding to the clauses in Experiment 2 in a similar way, suggesting that prominence relations are indeed “inherited” by smaller units from the larger units they are contained in.

Investigating active gap filling inside Norwegian embedded questions

Anastasia Kobzeva ¹ & Dave Kush ²

¹NTNU

²University of Toronto

Research suggests that active gap-filling does not happen inside islands. It is unclear how cross-linguistic variation in island effects impacts active filler strategy. We test whether active gap-filling persists inside embedded questions (EQs) in Norwegian – a non-island domain in the language. In an SPR experiment, we investigate whether participants exhibit filled-gap effects at the embedded object position inside embedded declaratives and EQs. Items followed a 2x2 design manipulating the distance between the filler – an RC head – and the gap (Short vs. Long), and the type of embedded clause (Declarative vs. Interrogative). In Short conditions, the relative pronoun immediately followed the gap, (e.g., Anna talked about the teacher who ___ confirmed...). In Long conditions, the gap came after the embedded object, creating the conditions for a filled-gap effect at the object (e.g., Anna talked about the teacher who she confirmed that the principal scolded the student in front of ___). The embedded clause was either declarative (confirmed that) or interrogative (remembered whether). If dependencies into EQs are represented by the grammar of Norwegian, we expect to find filled-gap effects inside EQs comparable to the ones inside embedded declaratives. Data collection is ongoing.

**Processing Which-questions in Romanian: A visual-world eye-tracking study
with adults and children**

Anamaria Bentea¹ & Theo Marinis^{1 2}

¹University of Konstanz

²University of Reading

Adults and children exhibit an initial preference to interpret which-object questions as subject, displaying an agent-first interpretation bias. This initial bias presumably occurs when the *wh*-pronoun is ambiguous between a subject and object interpretation. Romanian presents a good test case for this hypothesis: it marks the *wh*-object with a differential object marker (DOM), allowing to examine whether early case disambiguation can preempt misanalyses and assist interpretation. Using the visual-world paradigm, we assessed the processing of which-questions by Romanian-speaking adults and children to investigate whether the presence of DOM guides online processing and whether additional morphosyntactic information (number agreement) facilitates object which-processing. 33 adults (19yo-to-35yo) and 30 children (6yo-to-9yo) saw pairs of pictures on a screen. While looking at the pictures, they heard a which-question and had to choose the matching picture in 32 test trials and 32 fillers. Accuracy results revealed ceiling performance in adults, significantly better performance with subject-questions in children and no number agreement effect. The eye-gaze data i. suggest that the number agreement cue together with DOM guides online processing more than DOM on its own in adults and children and ii. reflect qualitatively similar, but more protracted over time processing strategies in children compared to adults.

Why do we use fragments? - Testing the predictions of a game-theoretic approach

Robin Lemke ¹

¹Saarland University

Speakers can use fragments (“A coffee, please”) instead of full sentences (“I would like to have a coffee, please”) to e.g. order something in a coffee shop. While the syntax of fragments is well studied, why and when speakers sometimes prefer a fragment over a sentence is not. I present a game-theoretic account of fragment usage and hypothesize that like in similar approaches (Franke 2009), the speaker chooses the optimal utterance (sentence or fragment derived from it by grammatical omissions) to get a meaning across. The hearer infers which meaning the hearer had in mind: Among those meanings from which the utterance could have been derived and considering the prior likelihood of meanings (before hearing the utterance), the hearer goes for the meaning with the highest posterior likelihood. The higher the likelihood of the most likely message is, the more acceptable should fragments be. This prediction is supported (CLMM: $\chi^2=8.97$, $p<0.01$) by a rating study (48 subjects) testing stimuli based on a crowd-sourced dataset collected by Lemke (2021), where subjects ($n=100$) produced the most likely utterance in 24 scenarios. This suggests that the usage of fragments depends on a trade-off between a gain in efficiency and an increase in ambiguity.

Evidence from child Romanian for the conjunctive interpretation of disjunction

Adina Camelia Bleotu¹, Rodica Ivan^{2,1}, Gabriela Bîlbîie¹, Mara Panaitescu¹, Monica Casa¹, Anton Benz³, Lyn Tieu⁴ & Andreea Nicolae³

¹ University of Bucharest

² Acuity Insights

³ Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS) Berlin

⁴ University of Toronto

Studies show that adults interpret simplex disjunction (The hen pushed the train or the boat) inclusively (The hen pushed one, possibly both) or exclusively (The hen pushed either one but not both), while they interpret complex disjunction (e.g., either...or) exclusively. Children are instead inclusive or conjunctive (The hen pushed both) with simplex and complex disjunctive alike. While previous research focused on one simplex and one complex disjunction, we investigate multiple simplex disjunctions (neutral/prosodically marked 'sau') and complex disjunctions (with/without a simplex counterpart: 'sau...sau', 'fie...fie') in child Romanian. We ask whether children's conjunctive interpretation of disjunction is an experimental artifact that arises in contexts where the disjunctive statement mentions all the objects in the display, and is therefore not informative; it should thus disappear when there are additional objects in the display. We conducted two TVJT guessing games where participants evaluated a puppet's guesses. Experiment 1 (50 4-6-year-olds, 115 adults), where the display had 2 objects, and disjunctive statements mentioned both, shows that while adults are exclusive, children are conjunctive with fie...fie but inclusive elsewhere. Experiment 2 (51 4-6-year-olds, 100 adults), containing 2 additional unmentioned objects, shows similar results. Thus, children's conjunctive interpretation of 'fie...fie' is not an experimental artifact.

Pragmatic Implicature Processing in ChatGPT

Zhuang Qiu¹, Xufeng Duan¹, Zhenguang Cai^{1 2} & Nan Zhao³

¹Department of Linguistics and Modern Languages, The Chinese University of Hong Kong

²Brain and Mind Institute, The Chinese University of Hong Kong

³Department of Translation, Interpreting and Intercultural Studies, The Hong Kong Baptist University

Recent large language models (LLMs) and LLM-driven chatbots have fuelled much interest in the extent to which these artificial systems possess human linguistic capacities. We examine this issue by looking at whether ChatGPT resembles humans in the ability to enrich literal meanings of utterances with implicatures. Humans not only distinguish pragmatic implicatures from the truth-conditional semantics, but also, the computation of implicatures is contingent on the communicative contexts. We assessed the pragmatic capabilities of ChatGPT by subjecting it to three preregistered experiments, focusing on the computation of pragmatic implicatures. The first experiment tested whether ChatGPT inhibits the computation of generalized conversational implicatures when explicitly required to process the truth-conditional meaning of the texts. The second and third experiment tested whether the communicative contexts affect how ChatGPT computes scalar implicatures (SIs). In all three experiments, ChatGPT failed to show a human-like flexibility in switching between pragmatic and semantic processing, and moreover, the well-established effect of the communicative contexts on the SI rate was absent in ChatGPT judgements. Overall, our experiments suggest that though ChatGPT impresses the world with its performance in a variety of language tasks, it nevertheless does not resemble human beings in the processing of pragmatic implicatures.

An experimental study on social meanings of modal concord in English

Mingya Liu¹ & Stephanie Rotter¹

¹Humboldt-Universität zu Berlin

Modal concord (MC) refers to the phenomenon where two modal elements of the same modal flavor (epistemic modality) and modal force (possibility (P) or necessity (N)) co-occur with an interpretation of one modality. Our study is concerned with the social meaning of MC vs. single modals (SM) in American English (AE). We use a set of social meaning measures to tackle speaker perception of sentences, e.g., “I {may possibly / must certainly} have lost my keys.”. Exp1. (native AE participants: N=48, data collection ongoing; items: N=24) used a 2x2-factorial design (FORCE: P/N; NUMBER: SM/MC). Participants read sentences and rated a set of questions about the speaker on a 7-point Likert scale. MC was associated with 1) significantly higher formality and confidence ratings than SM, 2) with significantly lower warmth and coolness ratings than SM. Sub-analyses of N- and P-modals will be conducted once data collection is complete. MC has a distinct social meaning from SM. We will conduct Exp2 manipulating the context (formal vs. informal) to further investigate the social meaning of the alternation in different situational-functional settings. The results of Exp1/2 will be presented.

An ERP Study on the Pragmatic Processing of Korean Honorifics and Politeness

Hyeyun Jeong ^{4 1}, Jiyeong Kim ², Haayan Jang ⁴, Jieun Kiaer ³ & Sungeun Lee ^{4 5}

¹Department of Korean Language Education, Seoul National University

²Department of Linguistics, Yale University

³Oriental Institute at Hertford College, University of Oxford

⁴Brain Humanities Lab, Seoul National University

⁵Department of German Language & Literature, Seoul National University

Korean has a sophisticated honorifics system that varies depending on the conversation partner. This study investigates whether Korean honorific processing is rule-based or lexicon-based by measuring event-related potentials (ERPs) in response to honorific mismatches. Thirty Korean native speakers were presented with eight versions of Korean sentences with identical content but differing in formality (informal/formal), honorifics (honorific/non-honorific), and categories of address forms (honorific/non-honorific). ERPs were measured after the presentation of honorific verb marking at the end of the sentence. As a result of the experiment, in the 400-500 ms of time windows, the N400 effect due to the mismatch of Korean honorifics was found in the lateral electrodes, but in the 650-750 ms time windows, P600 effect was not found. The N400 effect was greater when non-honorific verbal marking was combined with honorific address terms, and was greater in formal style sentences than in informal ones. These findings suggest that honorific concord in Korean is not strictly grammatical and that higher-status interlocutors, especially in more formal situations, are more sensitive to honorific mismatches among Korean speakers. This study shows that Korean honorific concord is a semantic-pragmatic cognitive mechanism rather than a rule-based one.

Empathic concern, fantasy, and verbal irony processing

Megan Bohach¹, Herbert Colston¹ & Juhani Järvikivi¹

¹University of Alberta

Verbal irony and personality characteristics have been studied extensively, but separately. Irony processing studies have found that irony level (ironic/literal) and comment type (criticism/praise) interact to affect processing cost. The additional impact of empathy has been considered in clinical populations; however, its effect in typical populations remains understudied. Consequently, the present study investigates whether irony processing and construal is influenced by empathy levels. The effect of shyness is also considered. A self-paced reading and rating task using three-line dialogues collected reading time, ratings, and personality scores. LMERS modelled overall reading time, while GAMMs modelled ratings and considered individual differences. Overall, the reading time patterns display a two-way interaction which matches previous research ($p < .001$), where ironic praise and literal criticism carry the greatest processing cost. Shyness is associated with longer reading times overall. However, empathic concern affects irony level ratings for ironic praise ($p < .001$). Visual inspection confirms that individuals low in empathic concern misidentify ironic praise as less ironic than literal statements. This matches previous findings for political conservatism, which is correlated with lower empathy scores. These results successfully replicate reading time effects for irony subtypes. Further, they expand our understanding of individual differences in irony processing.

**The Pragmatic and Syntactic Properties of Definiteness in Modern Hebrew:
evidence from on-line tasks (self-paced reading and self-paced listening) and
off-line tasks (reading acceptability judgment task and a listening
acceptability judgment task)**

Dana Plaut-Forckosh¹ & Natalia Meir¹

¹Bar-Ilan University

The goal of the present study is to evaluate the semantic/pragmatic and the morphosyntactic properties of definiteness (un)marking in Hebrew, using (1) a reading acceptability judgment task (n=20), (2) an auditory acceptability judgment task (n=36), (3) an on-line self-paced reading task (n=20), and (4) an on-line self-paced listening task (n=20). In all tasks, three conditions were manipulated in the subject and object positions: Baseline; Pragmatic violation, and Syntactic violation (112 items). The off-line tasks probed naturalness ratings (1-7), while the on-line tasks measured RTs, converted into residuals. Using mixed-effect modelling with two random effects (participant and item), the results show strong sensitivity to definiteness (un)marking across tasks. Yet, in the off-line tasks, listeners rated errors higher than their reader counterparts. Moreover, the self-paced listening task showed insensitivity in the subject position and partial sensitivity in the object position. One explanation is task-internal flaws, but it could also be attributed to the phonological reduction of the definite article as well as the "inherited complexities of listening" (Johnson 1992), or the grammatical "illusions" (Bock & Miller 1991) during speech. These findings suggest that modality can play a role in linguistic performance. We will discuss such findings and their implications both linguistically and methodologically.

The Processing Difference between Metaphor and Simile: Evidence from a Cross-Modal Priming Study

Xinxin Yan ¹

¹University College London

Metaphors and similes have been traditionally considered to be the same, with metaphors being regarded as implicit similes and the two figures are processed in the same way as comparison. However, the categorisation account and recent experimental findings suggest the opposite: metaphors and similes are actually distinct figures and are processed differently. Their crucial difference seems to lie in whether a broader, ad hoc concept is constructed or not during the figurative interpretation, with metaphor interpretation naturally leads to the construction of a radically modulated vehicle concept, whereas such conceptual modulation would not occur for simile. This study uses an online cross-modal priming task to measure and monitor the level of activation of the literal meaning of the vehicle term during the real-time processing of metaphors and their corresponding similes. Results revealed a significant difference in the activation pattern of the contextually relevant properties and superordinates (irrelevant) between metaphor and simile by the end of their processing: while the literal meaning of the vehicle term in metaphors becoming deactivated as the processing proceeds, it remains activated throughout simile processing. The findings support categorisation account's view on metaphor and simile to be processed differently and challenges the traditional view.

What a difference a syllable makes - rhythmic oral reading of conventional poems

Judith Beck¹ & Lars Konieczny¹

¹Center for Cognitive Science, Department of Psychology, University of Freiburg, Germany

The rhythmic experience in reading conventional poetry is based on the composed syllables and their respective phonemic quality, which allows the projection of meter and enables the prediction of subsequent input. However, the relational contribution of top-down vs. bottom-up processing remains unclear. To investigate it, we manipulated poems by replacing regular syllables at random positions with “tacks”. The participants' voices were recorded as they read the poems aloud. We calculated the syllable onset interval (SOI) and the mean syllable intensity, to operationalize how strongly a syllable was stressed. The results show that the average articulation duration of metrically strong regular syllables was longer than that of weak syllables. This effect disappeared for “tacks”. Syllable intensities also captured the metrical stress of “tacks”, but only for musically active participants. In addition, we calculated the normalised pairwise variability index (nPVI) for each line as an indicator of rhythmic contrast (long/short + louder/quieter). For SOI, the nPVI showed that lines including “tacks” were read with less variation than lines without “tacks”. For intensity, the nPVI did not capture significant effects. Our results suggest that the continuous integration of sufficiently varying bottom-up information appears to be necessary to maintain stable metrical pattern predictions.

**Naturalistic prosody leads to acceptable resumptive pronouns in English:
Evidence from audio stimuli**

Yourdanis Sedarous¹, Felicia Bisnath¹ & Savithry Namboodiripad¹

¹University of Michigan, Ann Arbor

Resumptive pronouns (RPs) in English are elicitable and produced in natural speech but consistently rated unacceptable (Morgan & Wagers 2018). We ask whether cliticizing the RP – phonologically reducing it and attaching it prosodically to a preadjacent – increases acceptability compared to morphophonologically independent “full” RPs and gaps. We tested subject- (N=118) and that-trace (N=118) islands (1-7 ratings, audio stimuli, 2x3 design crossing CONSTRUCTION [ISLAND vs. NON-ISLAND] with PRONOUN [GAP vs. FULL RP vs. CLITIC]). Cumulative link mixed models were fit (predicting RESPONSE, fixed effects=CONSTRUCTIONxPRONOUN; random intercepts=ITEM, PARTICIPANT). There was a small but significant main effect for subject-islands only (non-islands>islands, $\beta=.5843$, $p<.006$). Non-island gap constructions were rated higher than island gap constructions for subject-islands ($\beta=2.2447$, $p<.001$) and that-trace islands ($\beta=2.6859$, $p<.001$), but there were no other significant effects. Cliticizing did not increase RP acceptability. However, means for all RP constructions (subject-island $\mu=3.5-4.0$; that-trace $\mu=4.2-4.6$) were comparable to grammatical-but-syntactically-complex fillers (subject-island $\mu=4.19$; that-trace $\mu=4.20$), and significantly higher than ungrammatical fillers (subject-island $\mu=2.13-2.77$, $\beta=1.11-1.93$, $p<.001$; that-trace $\mu=1.98-2.65$, $\beta=2.19-2.57$, $p<.001$). This indicates that prosody reconciles the apparent disconnect between acceptability and production of English RPs, supporting a processing-based account of RP acceptability (contra outright ungrammaticality, cf. Ferreira & Swets 2005).

**Garden-path no more: How prosody resolves the Complement Clauses /
Relative Clauses ambiguity**

Nino Grillo ¹, Andrea Santi ², Miriam Aguilar ³, Leah Roberts ¹ & Giuseppina Turco ⁴

¹University of York

²University College London

³Universidad Complutense de Madrid

⁴CNRS-Université Paris 7 Paris Diderot

Prosody has been shown to successfully disambiguate a selected number of garden-path sentences (see e.g. Kjelgaard & Speer 1999; Grillo et al. 2018 and Wagner & Watson 2010 for review). We extend this work by showing that: - Speakers prosodically disambiguate Complement Clauses (CCs: John [told [the woman] [that he was running with Bill]]) and Relative Clauses (RCs: John [told [the woman [that he was running with] [to wait]]). -Moreover, listeners are sensitive to this prosodic disambiguation and can use it to avoid garden-path effects. EXP1: A Planned Production (N=10 English speakers), 24 target sentences shows that speakers make use of both temporal and tonal cues to disambiguate the two readings. EXP2: In a Forced-Choice Comprehension task, 60 participants heard sentence fragments up to (but not including) the disambiguating region of ambiguous CC/RC (e.g. John told the woman that he was running with...) and selected between CC (Bill) and RC (to wait) continuations. Sentences contained prosodic disambiguation consistent with EXP1. Results: Main effect of Prosody ($p < .0001$). % of RC-choices RC-Prosody: 57.9% CC-Prosody: 25.5% Post-hoc analysis removing 8 outlier participants (who always only selected the CC continuation) showed the prosodically targeted structure being selected equivalently (70%) across conditions.

The role of metrical structure (syllables & feet) in L1 and L2 loanword recognition

Isabella Fritz¹, Aditi Lahiri¹ & Sandra Kotzor^{1,2}

¹University of Oxford

²LMU Munich

Romance loanwords across Germanic languages (Dutch [D], English [E], German [G]) often differ in metrical stress, determined by the organisation of syllables and feet. Initially stressed disyllabic words may have different foot structure: E salad ['(sæ)(læd)] = 1 foot vs. reptile ['(rɛp)][(tail)] = 2 feet. G and D counterparts can differ in foot structure and position of main stress; G (za)'[(la:t)], D (sa)'[(la:)(də)]. In three cross-modal ERP fragment priming studies, we investigated whether L1 (G/D) foot structure influences word recognition in L2 (E). Conditions included English initially stressed disyllabic loans (a) not existing in G/D (b) 2 syllables in G/D and (c) trisyllabic in G/D. For E L1, priming modulated different ERPs depending on the number of feet (1 vs. 2) whilst RTs were the same across conditions. L2 results show (i) strongest priming effects (RTs) for E loans not existing in G/D and (ii) different ERPs are modulated compared to shared loans. For shared loans, we found a hierarchy of processing difficulties with the ones being most dissimilar in metrical structure to L1 causing the most processing effort. Overall, we found that the metrical structure strongly influences word recognition, with the L1 phonology guiding the processing of loans in L2.

Memory consequences of word predictability in the visual world

Joost Rommers¹, Elle Milne¹, Thomas J. Alexander¹, Lucas K. Andersen¹ & Georgia K. Rubidge¹

¹University of Aberdeen, UK

Predictions can give listeners a head start on processing, as anticipatory eye movements in the visual world paradigm have suggested. But beyond processing, does word predictability improve or impair the representations that listeners ultimately retain in memory? And are such memory consequences mediated by anticipatory eye movements? Sixty-four participants viewed displays with a target object and three distractors (e.g., a piano, a flower, a brick, and a swan) while listening to sentences with a constraining or unconstraining verb ("The man plays/sees the depicted piano"). Listeners preferentially looked at the target object before noun onset only when hearing a constraining verb, suggesting that they predicted upcoming information. After a brief distraction task, participants judged whether they had previously heard the (un)predictable words, in a surprise recognition memory test. Listeners recognized fewer predictable words than unpredictable words, suggesting impoverished representations of predictable words. However, signal detection-theoretic analyses (incorporating false alarms to distractor object names) revealed that this reflected a conservative response bias rather than reduced discriminability. Eye movements before or after target word onset were not associated with improved or impaired memory. In sum, word predictability strongly influenced eye movements in the moment, but had limited consequences for memory.

What's in a face emoji? An experimental study of visually similar face emojis

Lea Fricke ¹, Patrick Grosz ² & Tatjana Scheffler ¹

¹Ruhr-Universität Bochum

²Universitetet i Oslo

The literature on face emojis raises the central question whether they should be treated as pictures (Maier 2023) or conventionalized signals (Grosz et al. 2023). Our experiment addresses this question by investigating semantic differences in visually similar face emojis. We compare 6 emoji pairs with a minimal visual difference that either does (+AU) or does not (-AU) correspond to a difference in a human facial expression according to Fugate & Franco's (2021) adaptation of the Facial Action Coding System. We created two contexts per pair, each fitted to correspond to a prominent meaning of one or the other emoji, based on Emojipedia descriptions and the results of a norming study. Participants (n=160) had to choose the suitable emoji for each context from the two emojis in the pair. The rate with which the context-matching emoji is chosen is significantly above chance for +AU (68%) and -AU emojis (71%) and it does not differ significantly between the two conditions. Thus, minimal visual differences create a difference in meaning for both types of emoji pair. This result favors a lexicalist approach to emoji semantics, which treats them as conventionalized signals, over a pictorial approach, which entails a stronger role of facial expressions.

Listeners show better memory for non-native (L2) than native (L1) speech

Feride Akalan¹, Julia Stasova¹ & Agnieszka Konopka¹

¹University of Aberdeen

L1 listeners show lower false memory rates for words presented by an L2 than an L1 speaker in the DRM paradigm (Romero-Rivas et al., 2019) but higher levels of memory errors for L2 speech in more naturalistic paradigms (Lev-Ari & Keysar, 2012). This study compared false memories generated from full sentences produced by an L1 and L2 speaker in both L1 and L2 listeners. Eye-tracked participants (19 L1, 22 L2) studied pictures presented with recorded descriptions (e.g., “The girl took the cake”) produced by an L1 speaker of English or a strongly-accented L2 speaker. The recognition memory test included studied sentences (“... took the cake”) and sentences expressing unstudied inferences (“... ate the cake”). Both L1 and L2 participants’ eye movements during study showed greater synchronisation with the L2 input. At test, both groups were also less likely to endorse sentences expressing unstudied inferences (i.e., to generate false memories) after listening to the recorded L2 speaker than the L1 speaker (replicating Romero-Rivas et al., 2019), but performance depended on their familiarity with the L2 accent (higher familiarity resulted in higher false memory rates). Thus, memory varied with the perceived ease of L2 processing and allocation of resources.

Effects of predictability and plausibility on context updating

Miriam Brockmeyer¹

¹Ludwig-Maximilians-Universität München

The current study examines the processing of semantically anomalous (“impossible”) relative to unpredictable yet plausible and predictable input. In a self-paced reading task combined with an end-of-sentence plausibility judgment task, participants read highly constraining sentences ending in impossible, unpredictable, or predictable nouns. Reaction times were analyzed for the target word, the separately presented period, and the plausibility judgment. In all three regions, reaction times were significantly slower for unpredictable endings than for impossible or predictable ones, while impossible words were read slightly slower than predictable ones only on the target word segment. A subsequent word recognition task revealed that unpredictable target words were recognized correctly significantly more often than impossible ones. The results suggest that impossible sentence completions were processed with less effort and less thoroughly than unpredictable ones, presumably because they could be quickly judged impossible. Unpredictable completions may have prompted updating of the context model to accommodate the unexpected input. An ongoing follow-up study explores whether the pattern of results changes if participants do not judge the plausibility of the sentences. In future work, we want to test whether this pattern also emerges when testing L2 learners of German.

**Processing temporal concord and modality: A self-paced reading study on
you and hui in Taiwan Mandarin**

Aymeric Collart ¹

¹Academia Sinica

Understanding a sentence involves comprehending when the event takes place, but few is known about how humans compute the concord between time adverbs and tense/aspect/modality/mood marking in real time. Previous self-paced reading studies on Indo-European languages indicate that processing past and future tense require different cognitive resources. Here, we report a self-paced reading experiment in a typologically different language, Taiwan Mandarin, which grammaticalized two modal auxiliary verbs: 'you' ('to have', expressing assertive/factual modality, ungrammatical with future time adverbs) and 'hui' (expressing the non-factuality of a posterior situation, ungrammatical with past time adverbs). We placed these auxiliary verbs in a temporal concord configuration to investigate whether processing the temporal concord violation of a past-time related marker ('you') differs from future-time related marker ('hui'). The temporal concord violation of 'hui' elicited longer reading times than its grammatical counterpart starting from the presentation of 'hui' until the last word. Marginally longer reading times were found for the ungrammatical 'you' at the verb, and significantly longer at the last word, even longer than 'hui'. These results show that different processes are at stake, and they suggest that processing past/factual 'you' involves representing the situation at the discourse/contextual level, while future/non-factual 'hui' is locally processed.

The influence of contextual predictability on subordinate bias effect when reading Chinese biased homographs: Evidence from eye movements

Jie-Li Tsai¹

¹Department of Psychology, National Chengchi University, Taiwan

The present study investigates the influence of contextual predictability on word meaning activation when processing Chinese homographs. The subordinate bias effect (SBE) found in previous research provided the evidence of dominate meaning activation competing with the context-biased activation of subordinate meaning. However, some studies argued that a strong context could eliminate the SBE to show the direct selection of the subordinate meaning. One experiment was conducted to address this issue by manipulating contextual predictability and meaning ambiguity of Chinese words which were embedded in sentences. Sixty native Chinese speakers read 120 sentences while the eye movements were recorded. The results showed that processing homographs were longer than unambiguous words in both the first-pass and second-pass measures of eye movements on target words. The interaction of contextual strength with the SBE was found in the second-pass measures, showing a smaller but significant SBE in the strong context than in the weak context which was biased to the subordinate meaning. The findings suggest that the activation of dominate meaning competes with context-biased subordinate meaning during lexical access. In addition, the context-inappropriate activation of dominate meaning could sustain to interfere the later integration stage and such cost is reduced in a strong context.

A crossmodal comparison of language-brain entrainment in spoken and signed languages

Chiara Luna Rivolta ¹, Brendan Costello ¹, Mikel Lizarazu ¹ & Manuel Carreiras ^{1 2}

¹Basque Center on Cognition, Brain and Language

²Ikerbasque Basque Foundation for Science

Entrainment—the phase synchronisation of neural activity with the speech signal—supports spoken language processing. In this study we investigated whether entrainment extends to sign language as well. To disentangle the effect of language modality and familiarity we recorded brain activity of two groups of hearing participants – 15 expert signers and 15 sign-naive individuals – while they watched videos in a familiar spoken language (Spanish), an unfamiliar spoken language (Russian), a familiar sign language (Spanish Sign Language) and an unfamiliar sign language (Russian Sign Language). Each video was recorded with motion capture to provide kinematic information of different body articulators. We measured coherence between the preprocessed MEG data and the linguistic signal (speech envelope for spoken language or the articulators speed vector for sign language), and used cluster-based permutation tests to assess statistical differences across experimental conditions. We found language-brain entrainment in both spoken and signed languages, although with specific characteristics depending on modality. Entrainment in signed languages is not as strong, is limited to the delta frequency band (1- 4 Hz) and located in brain areas devoted to motion processing. Overall, language temporal structure seems to play a less important role in sign language processing compared to spoken language.

Effects of age of acquisition on sign language processing in hearing bimodal bilinguals

Anna Banaszekiewicz¹ & Brendan Costello²

¹Nencki Institute of Experimental Biology, Polish Academy of Sciences, Warsaw, Poland

²Basque Center of Cognition, Brain and Language, Donostia-San Sebastián, Spain

Neuroimaging studies of unimodal bilingualism (usage of two spoken languages) revealed that neural response during linguistic processing is mediated by several environmental and behavioral factors, e.g. age of acquisition (AoA). The aim of our study was to examine effects of AoA in hearing proficient bimodal bilinguals (users of sign and spoken language). Using functional magnetic resonance imaging we investigated brain activity during semantic judgment task in Polish sign language (polski język migowy, PJM) and audio-visual spoken language in proficient bimodal bilinguals: native signers (NS), who use both languages since childhood and late signers (LS), who acquired PJM after puberty. A conjunction analysis revealed that both groups activated the left inferior frontal gyrus (IFG) and middle temporal gyrus (MTG) during semantic processing in both languages. However, LS – but not NS – engaged the left IFG to a greater extent during PJM processing, compared to spoken language. Between-group difference (controlled for proficiency) was found during the PJM task in the right angular gyrus, with greater recruitment in NS, compared to LS. In conclusion, using a between-language and between-group comparisons approach we show that AoA modulates brain activity in frontal and parietal regions in bimodal bilinguals during semantic processing.

Negative islands do not block active gap filling

Zirui Huang¹ & Matthew Husband¹

¹Faculty of Linguistics, Philology and Phonetics, University of Oxford

Research has found that the parser respects strong wh-island constraints when actively positing gaps for displaced phrases in grammatical positions, reflecting the parser's rapid use of syntactic constraints to avoid positing illicit dependencies in real-time. Long-distance dependencies are also sensitive to semantic constraints. Negative islands, a type of weak island, selectively constrain certain wh-dependencies that violate Dayal's (1996) maximal informativity presupposition on questions, i.e., that the answer set contains a true answer entailing all the other true ones (Fox & Hackl, 2007; Abrusán, 2011). Whether the parser can use negative islands in real-time is unclear. Compared to syntactic constraints, it may take the parser more time to use presupposition violations to block dependency formation. Three studies (offline acceptability judgment, self-paced reading, and eyetracking-while-reading) manipulating ISLAND type (No-, Neg-, Wh-Island) were conducted to examine whether negative islands are as effective as wh-islands at blocking illicit gaps. Our results suggest that although comprehenders are sensitive to negative island constraints in offline judgments, the parser is unable to use them to block real-time active dependency formation. This asymmetry suggests that the effects of weak (semantic) islands take time to emerge, unlike strong (syntactic) islands which are more immediate.

A Dataset for Physical and Abstract Plausibility and Sources of Human Disagreement

Annerose Eichel¹ & Sabine Schulte im Walde¹

¹University of Stuttgart

We present a novel dataset for physical and abstract plausibility of events in English. The ability to discern plausible from implausible events is crucial for natural language processing and comprehension. Most previous work on computational models of plausibility however focuses on semantic knowledge relevant for distinguishing physically plausible events such as “cat-eat-sardine” from implausible ones such as “rain-break-belly”. Furthermore, while recent datasets include events with conceptually abstract participants as to our knowledge no previous work has systematically investigated the interaction of event plausibility and abstractness of the involved concepts. The current study extends the traditional focus and proposes to systematically discern abstract plausible events such as “law-prohibit-discrimination” from implausible ones such as “humor-require-merger”. Based on naturally occurring sentences in the English Wikipedia, we infiltrate degrees of abstractness, and automatically generate perturbed pseudo-implausible events. We annotate plausibility using crowd-sourcing, and perform extensive cleansing to ensure annotation quality. As human intuition regarding the assessment of plausibility is highly individual, we represent and examine annotation disagreement. In-depth quantitative analyses indicate that annotators favor plausibility over implausibility, and disagree more on implausible events. We further find that event abstractness has an impact on plausibility ratings: more concrete event participants trigger a perception of implausibility.

Bilinguals predict words using frequencies not features

Sarah Phillips^{1 2} & Ailís Cournane²

¹Georgetown University Medical Center

²New York University

The prediction mechanism utilizes acquired grammatical information to anticipate incoming language (Altmann & Kamide, 1999, *inter alia*). For example, Spanish speakers use gender marking on determiners to anticipate the target noun in a visual world with two objects (Lew-Williams & Fernald, 2007). We learn categories (determiners) and their features (masculine, feminine) from robust statistical information in our input (Reeder et al., 2013, 2017), but bilinguals receive more varied distributional information from their mixed-language input. How might variation in one's input affect the formation and usefulness of such grammatical information? Using a visual world paradigm with four objects, the current study presented Spanish/English bilingual adults (n=33) two types of sequences ("find the dog", "the dog runs") that varied by language (e.g., "find the dog", "encuentra el perro") and switching ("find the perro", "find el perro") to test for anticipatory effects of category and gender. We observed differences in looks to target between the specific determiners ("la" > "the" > "el") but not by gender. Our findings suggest that bilinguals categorize words across their languages and use relative frequencies within categories during prediction.

**Sensorimotor traces in temporal semantics: Evidence from mouse tracking
during line bisection**

Anastasia Malyshevskaya^{1,2}, Alex Miklashevsky¹, Martin H. Fischer¹, Christoph Scheepers³, Yury Shtyrov⁴ & Andriy Myachykov⁵

¹University of Potsdam

²HSE University

³University of Glasgow

⁴Aarhus University

⁵Northumbria University Newcastle

Existing studies reveal a close relationship between lexical-semantic access and visuo-spatial processing. Specifically, access to past/future related words leads to leftward/rightward attentional biases, respectively. Such biases accompany access to words denoting different time units – hours, days, and months. However, previous studies focused on delayed responses (e.g., key-press reaction times), and it remains unclear whether similar biases accompany earlier processing stages. Here we used time units (hours, days, months) as spatial-conceptual cues in a line-bisection task. These time units were presumed to have left (e.g., Monday) or right (e.g., Sunday) spatial biases. Participants (N = 57) listened to word stimuli and then used a mouse cursor to indicate the center of a horizontal line. We measured cursor movement trajectories, initial line intersection coordinates, and final bisection coordinates. We found an early trajectory divergence for hours and days, as predicted by their presumed spatial biases. Furthermore, we found similar spatial biases in the initial intersection coordinates for months, and in the final bisection responses for hours. Our results (1) suggest that time-related spatial biases emerge at processing stages preceding overt responses, and (2) provide further support to the idea of embodied and grounded representations of time-related lexicon.

Comparing L2 word learning using orthography versus visual referents

Mathew Cieśla^{1,2}, Katarzyna Jankowiak², Maksym Pozdniakov² & Efthymia Kapnoula^{3,4}

¹ University of Alabama

² Adam Mickiewicz University, Faculty of English

³ Basque Center on Cognition, Brain and Language

⁴ Ikerbasque - Basque Foundation for Science

Vocabulary acquisition is one of the most critical aspects of second language (L2) learning. Thus, pinpointing the training conditions that lead to better and faster L2 word learning can have wide theoretical and practical implications. This study examines how late, L2 learners acquire new lexico-semantic information when using orthography versus visual referents. To this end, by the time of the conference, we will have tested 60 adults, native speakers of Polish. During Session I (behavioral learning), participants are taught a series of 40, L2 words from an artificial language along with their meanings using a four-alternative forced-choice (4AFC) task. Half of the words are learned using orthography to present their meanings (i.e., Polish translations) and the other half using images. In Session II, 24 hours later, participants perform a translation priming task, while EEG signal is recorded. To assess participants' learning performance, we will examine the N400 event-related potentials (ERPs) for words presented congruently and incongruently (orthography vs. imagery) to how they were originally learnt. Our results will allow us to evaluate the efficacy of using imagery, as compared to orthography, in L2 word learning.

POSTER SESSION II

[PS-2.1]

Accuracy level of reading Japanese Kanji words and Japanese vocabulary size among Korean (L1) – Japanese (L2) bilingual children

Yeongsil Ju ¹ & Ami Sambai ¹

¹ Faculty of Human Sciences, University of Tsukuba

This study examined the effect of bilingualism on the accuracy level of reading kanji words and vocabulary size in children. Participants were 76 Korean-Japanese bilingual and 88 Japanese monolingual children from the third to sixth grades at a primary school in Japan. A kanji word reading test with 126 stimuli and a Japanese receptive vocabulary test with 16 stimuli were used to determine each child's reading accuracy level and vocabulary size. The Mann-Whitney U test revealed significant differences between both groups in both tests. The performance of monolingual children in each test was significantly higher than bilingual children. Children were classified into six performance-level groups according to standard deviation (SD). The chi-square test revealed that the number of bilingual children in the impaired ($<1.5SD$) and low-average ($<1SD$) group in the kanji word reading test, and the low-average group in the vocabulary test was higher than that of monolingual children; however, the high-average group ($>1SD$) in the kanji word reading test and the average ($-1SD \sim +1SD$) and the high-average group in the vocabulary test mainly comprised monolingual children. Thus, bilingualism is considered to affect children's accuracy level of reading kanji words and vocabulary size.

The effects of vowel length, vowel spelling, and L1 on consonant doubling decisions in English

Candice Frances¹, Eugenia Navarra-Barindelli² & Clara Martin^{2,3}

¹ Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands

² Basque Center on Cognition, Brain and Language (BCBL), Donostia-San Sebastián, Spain

³ Ikerbasque, Basque Foundation for Science, Bilbao, Spain

In our current study, we asked whether L1 speakers of Spanish (n = 47)—a transparent language that shares the writing system with English—were able to follow the same rules (graphotactic and phonotactic) to inform their spelling of new items as L1 speakers of a language that does not share its writing system with English (namely, Mandarin, n = 46, and Korean, n = 39). In all groups, participants had started learning English in primary school and had at least a B2 level of English. We focused on consonant doublings (e.g., [f] versus [ff]) and compared results from L1 Mandarin and Korean speakers (Yin et al., 2020), L1 English speakers (Treiman & Wolter, 2018), and L1 Spanish speakers. Participants listened to each pseudoword twice and had to spell it out. We counted the proportion of items that were spelled with a doubled medial consonant. These data tested the effects of vowel length and number of vowel graphemes before the consonant on consonant doubling. We found that although overall patterns were the same between groups, the participants with a different L1 orthography adhered more closely to the L1 English speakers, particularly with respect to vowel length.

Testing the Bilingual NP Hypothesis: Evidence from Arabic-English Code-Switching

Ji Young Shim¹, Heeju Hwang² & Tommi Leung³

¹ American University of Sharjah

² University of Hong Kong

³ United Arab Emirates University

The Bilingual NP hypothesis (Jake et al., 2002) argues that system morphemes such as determiners come from the matrix language (ML) rather than the embedded language (EL) in code-switching. This results in an asymmetry in code-switched NPs: while DETML+NEL is allowed, DETEL+NML is not. Full EL NPs (DETEL+NEL), which are an EL island, may occur, although rarely. To test the Bilingual NP hypothesis, we examined 70 Arabic-English bilinguals' language preference for determiners in code-switched sentences (ML=English, EL=Arabic). We manipulated the language of determiners and nouns in a sentence: (i) DETML+NPML (e.g., Qasim booked the tickets two weeks ago), (ii) DETML+NPEL (the ال تذكار), (iii) DETEL+NPEL (ال ال تذكار), and (iv) DETEL+NPML (ال ticket). Participants rated the naturalness of each sentence using a 4-Likert scale (1: very bad, 2: bad, 3: good, 4: very good), with reaction times (RTs) measured. Our result shows that monolingual (i.e. English) sentences were preferred to code-switched ones. For code-switched NPs, (iv) was rated higher than (ii) and (iii). RTs were shorter for (iii) and (iv) than (ii). These suggest that Arabic-English bilinguals asymmetrically choose determiners in one language, which is Arabic, but it does not follow the prediction of the Bilingual NP hypothesis.

The role of executive functions in bilingual language control in children

Elisabet García González ¹, Jussi Jylkkä ³ & Minna Lehtonen ^{2 1}

¹Center for Multilingualism Across the Lifespan, University of Oslo, Norway

²Department of Psychology and Speech-Language Pathology, University of Turku, Finland

³Department of Psychology, Åbo Akademi University, Finland

Language switching has been assumed to engage executive functions (EF), but evidence for this thesis is inconsistent. Recent skill learning accounts claim the presumed association would be weak in experienced bilinguals, and stronger in less experienced persons like children. To address this question, we studied associations between language switching in a cued naming (CN) paradigm and EF performance with tests of inhibition (flanker, NSCST) and shifting (DCSS, Color-Shape) in children aged 5-7. Moreover, we investigated whether children's parent-reported everyday language control ability at home was associated with CN and EF performance in the lab. If language switching engages EFs in children, we should see a positive association between CN and EF performance and between everyday language control ability and EF. Our results revealed the basic switching and mixing costs in children, which decreased with age. We found associations between CN mixing costs and some EF measures but not between CN switching costs and EF measures. Furthermore, our results did not indicate a connection between children's everyday language control and CN or EF performance. Apart from some evidence for involvement of domain-general monitoring in laboratory-based language switching, we found little support for the view that language switching engages EFs in children.

Local syntactic coherence effects in GPT3 surprisals

Lars Konieczny¹, Mateo Cortes¹, Tobias Hoffmann¹ & Henrik Lorenzen¹

¹ University of Freiburg

Local syntactic coherence (LSC) effects have shown that the human sentence processor (HSP) can be misguided by a locally embedded sequence of words that could form a sentence in isolation, but must be analyzed differently in the left context of the sentence. These effects have been attributed to temporal local affixes (SOPARS, Tabor_et_al. 2004) and word-wise prediction in recurrent networks (Konieczny_et_al. 2005), among others. Large language models, such as GPT-3+, have impressive capabilities in language comprehension and production. Due to their transformer-based architecture, they should be immune to LSCs. We used the OpenAI API to retrieve the surprisal values for our test items word by word. We then reanalyzed our eye-tracking reading data on sentences with local syntactic coherence embedded in short contexts (citation omitted). Contexts were constructed to draw attention to either the local coherence meaning or the global meaning of the target sentence. While the context manipulation affected the size of the LSC effect, it did not alter GPT-3 surprisals in the critical region. While GPT-3 surprisal scores were good predictors of total reading time, they did not eliminate LSC effects. We conclude that HSP, unlike transformer-based LLMs, employs mechanisms of local attention.

Can Large Language Model Surprisal Capture the Informativity Bias in Human Language Processing?

Hailin Hao¹ & Muxuan He¹

¹University of Southern California

Surprisal theory (Hale, 2001) proposes that the processing difficulty of a word is inversely proportional to its contextual probability. Surprisal values obtained from large language models (LLMs) have been shown to be a good fit for human reading time data (i.e., surprisal value positively correlates with reading time). However, two recent studies on the effects of informativity (Rohde et al., 2021; He & Kaiser, 2023) indicated that comprehenders prefer more newsworthy contents to highly predictable next words. It is an intriguing question whether LLMs can capture the informativity bias seen in humans, or they invariably favor more probable contents. We elicited surprisal values using the stimuli of those two studies, and compared the results of several state-of-the-art LLMs with the human reading experiments. Our analysis shows that contra humans, LLM surprisal is consistently lower for more probable information, which suggests a lack of informativity bias in the tested models. We believe this study has two major contributions. It pointed out a direction of improving the performance of LLMs in downstream tasks such as story generation and question answering. It also emphasizes that informativity bias plays a role beyond surprisal in human language processing.

Shallowly accurate but deeply confused - how language models deal with antonyms

Adèle Hénot-Mortier ¹

¹Massachusetts Institute of Technology

Statistical models of language have been argued to give a poor treatment of antonyms, due to them appearing in very similar environments. Can recent large language models (LLMs) distinguish between antonymic adjectives, and draw finer-grained inferences about them? By testing how 3 recent LLMs (BERT, XLNet, GPT-2) are “surprised” (in the sense of Hale 2001 or Levy 2008) by “stimuli” inspired from a psycholinguistic study (Ruytenbeek et al. 2017), we establish that LLMs are overall more likely to associate a negative adjective (A-, e.g. “short”) to the negation of its antonym (not A+, e.g. “not tall”) than vice-versa (Krifka 2007). We also show that $\frac{2}{3}$ models exhibit a stronger contrast for morphologically transparent pairs of antonyms (e.g. happy/unhappy) -- in accordance with Ruytenbeek et al.’s prediction. But despite being relatively human-like on sentence/word-level tasks, LLMs do not seem to encode the relevant parameters of the adjectives (polarity, effect of negation) in a very intelligible way, if at all, as shown by a more careful study of word embeddings and more directed natural language inference tasks. This casts doubt on the ability of LLMs to reflect (and not simply mimic) complex linguistic behavior.

Modeling Lexical Semantics: from Concrete to Abstract

Casey Kennington ¹

¹Boise State University

Children learn linguistic meaning in an embodied, interactive, and richly multimodal progression. In this context of language learning, children first learn many concrete concepts that denote physical things, then learn abstract ideas that build on the concrete concepts that they already know. In contrast, large language models such as ChatGPT or BERT `learn` linguistic meaning by observing patterns in a corpus of text. Though some language models claim to learn from multiple modalities, and others claim to be 'embodied', the setting where language is 'learned' for large language models remains vastly different from that of children: there is no progression of learning concrete concepts then abstract ideas that build on them. In this paper, we evaluate and scale up another possible method of learning linguistic meaning by using a dataset of words that denote visible objects and the Lancaster Sensorimotor Norms. We train classifiers to learn a concrete meaning, then use those as the basis for learning more abstract concepts. Our evaluation on a word retrieval task illustrates the potential utility of our method, but we leave for future work enriching large language models and evaluation on natural language processing tasks.

**The role of computational optimization in functional specialization of
wordform representation**

Enes Avcu¹, Kevin Brown² & David Gow^{1 3 4}

¹ Massachusetts General Hospital, Harvard Medical School, Boston, MA

² Oregon State University, Corvallis, OR

³ Salem State University, Salem, MA

⁴ Harvard-MIT Division of Health Sciences and Technology, Boston, MA

Maintaining that there is a single localized store of word representations has become less plausible as evidence has mounted for the widely distributed neural representation of wordform. We combine machine learning with neurobiological frameworks to demonstrate that functional specialization of wordform representation may partially be driven by computational tradeoffs. We found that neural networks derived from the EARSHOT model of spoken word representation (Magnuson et al., 2020) trained on mapping sound to articulation performed poorly when tested on their ability to map sound to meaning, and vice versa for networks trained to map sound to meaning. A network trained on both tasks simultaneously performed less well than either specialized network. Moreover, these neural networks developed hidden representations reflecting specialized, task-optimal functions without explicit training. Therefore, we believe the functional specialization of word representation in the brain at least partially reflects a computational optimization strategy given the diversity and nature of language-related tasks that the human brain faces.

Using cross-language automatic speech recognition and pronunciation variants to investigate voicing in European Portuguese fricatives

Anisia Popescu¹, Martine Adda-Decker^{1,2}, Ioana Vasilescu¹ & Lori Lamel¹

¹ LISN, CNRS, Université Paris Saclay

² LPP, CNRS, Paris Sorbonne Nouvelle

Small scale acoustic studies have showed voicing profiles of European Portuguese (EP) fricatives are closer to those of German than Italian. The present study tests whether these results can be replicated on large corpora using automatic speech recognition methodologies. More specifically we use either German or Italian acoustic models for fricatives when force-aligning a 114h EP corpus, while keeping the original Portuguese phone models for all other phonemes. Pronunciation variants for fricatives were added, allowing the system to choose which phone model (phonetically voiced or voiceless) best fitted the phonemically voiced fricatives. For example, when using the German acoustic model for fricatives on the EP data, if the Portuguese phonemically voiced fricative /v/ better matched the voiced German phone model [v], the output would be [v]. If the system preferred the voiceless phone model [f], the output would be [f]. If voicing profiles of voiced EP fricatives are closer to German (probability of voicing throughout the stop decreases starting 30 % of the voiced fricative), we would expect to find higher percentages of voiceless variants when using the Italian acoustic model. Results show this is indeed the case, confirming voicing profiles in EP are closer to those of German.

Syntactic Processing Load in Consecutive Interpreting in each Stage

Qianxi Lv¹, Chiyue Zhang¹, Yeting Shen¹, Yiman Zhang¹, Wenxuan Sun¹ & Yiwen Fu¹

¹ Shanghai Jiao Tong University

Interpreting is a cognitively demanding language processing tasks with complex syntactic processing difficulties and multi-tasking nature. Existing studies seldomly analyze the syntactic processing difficulties in interpreting from a quantitative approach, and no generalized conclusions have been obtained. This project, integrating corpus-based and computational linguistic analysis to by using disfluencies to mirror the scenario of syntactic processing load surpasses the cognitive resource threshold, while quantify various processing loads such as input and output syntactic complexity and syntactic reorganization. By doing so, we analyze the syntactic processing load during the two stages according to the Effort Model separately with Poisson regression statistical mode, namely 1) the effort for listening and analysis, memory and reconstruction in the listening comprehension phase and 2) syntactic reconstruction and production effort in the reformulation stage. It was found that the syntactic complexity, sentence length and syntactic restructuring methods in the input and output stages induced disfluencies, voiced pauses and silent pauses due to different levels and aspects of processing loads, and the coping strategies of professional interpreters in response to the multiple loads also differed.

Color Perception in Bilinguals is Momentarily modulated by Active Language

Akvile Sinkeviciute¹, Julien Mayor², Mila Vulchanova¹ & Natalia Kartushina²

¹ Norwegian University of Science and Technology

² University of Oslo

The present study examined whether language activation can momentarily affect color perception in bilinguals. Thirty-six Lithuanian-Norwegian bilinguals living in Norway performed a blue-shades color discrimination task with and without verbal interference (recall of digits). Lithuanian has distinct basic-level categories for blue – žydra “light blue” and mėlyna “dark blue”, whereas Norwegian has only one, blå. Separately, we identified individual color category boundaries for each participant. The results of mixed-effect regression analyses revealed that Lithuanian-Norwegian bilinguals discriminated two shades of blue faster when they simultaneously performed a verbal interference task in Lithuanian as compared to when they performed it in Norwegian – provided that the two colors fell across the individual color category boundary in Lithuanian ($F=5.02$, $p=0.025$). A range of controls (with forty Lithuanian and thirty-five Norwegian monolinguals; with color pairs that were distant or similar and with color pairs either crossing the category boundary, or not) ruled out alternative explanations for the effect. This demonstrates, within the same individuals, that active language processing can momentarily affect color perception and that the two domains that seemingly operate at different levels - high level language processing and low-level visual perception - in fact appear to interact dynamically within the same individuals.

Investigating the component processes underlying rapid automatized naming (RAN) across languages: Evidence from Chinese-English bilinguals

Ruofan Wu¹ & Hugh Rabagliati¹

¹University of Edinburgh

The rapid automatized naming (RAN) task reliably predicts variation in reading ability, though it remains unclear how cognitive processes underlying RAN relate to reading ability, and whether this differs across languages. Using Latin alphabetic and Chinese character stimuli, we evaluated how visual, phonological and – for the first time using Chinese stimuli – semantic similarity affect both RAN performance (quantified using voice and eye movement measures) and RAN-reading relationships, using bilingual adult participants (N = 40). Visual but not phonological similarity consistently decreased naming efficiency in all voice and eye movement measures in bilingual RAN. Moreover, semantic similarity increased pause time and decreased saccade amplitude. Finally, pause time and reading errors were found to predict some aspects of reading performance both within and across languages, although the predictive power was not strong (perhaps due to our highly educated subject group). These findings first confirm a key role of visual over phonological processing in RAN in English and Chinese, indicating that RAN quantifies the automaticity of visual processing across language typologies, and predicts reading ability across languages. Moreover, they provide first evidence for a role of semantic processing in RAN, a finding previously unattested due to focusing on alphanumeric RAN stimuli.

Ten years of linguistic diversity in language processing conferences

Aymeric Collart ¹

¹ Academia Sinica

Language processing research needs insights from typologically diverse languages. Anand et al. (2011) showed after exploring 4,000 psycholinguistic studies that only 57 languages were represented, and that 85 % of the studies involved 10 languages, primarily Indo-European. In this study, we ask whether linguistic diversity in language processing research increased in the last ten years (2012 to 2022) by exploring the languages investigated in two main conferences: CUNY-HSP and AMLaP. Overall, the 5,549 abstracts cover 105 languages, with the number of languages increasing over the years (28 in 2012 to 51 in 2022). 84.36 % of the studies focused on Indo-European languages, and 54.78 % on English only. However, from 2012 to 2022, the proportion of English studies decreased (72 % to 51 %) while it increased for other Indo-European (12 % to 29 %) and non-Indo-European languages (15 % to 18 %). Nevertheless, the proportion of WEIRD (around 96%) and non-WEIRD (around 4 %) languages did not significantly change. These data indicate that language processing studies got more diverse in the past ten years, even if these only cover a small part of the world's languages, and non-WEIRD languages are still underrepresented. Future investigations looking at language diversity according to different topics (e.g., argument structure processing) are planned.

No cross-linguistic variation in Spanish and English wh-island effects

Claudia Pañeda ^{1 2}, Sandra Villata ³, Dave Kush ^{4 5} & Jon Sprouse ³

¹ University of the Basque Country

² University of Oviedo

³ New York University Abu Dhabi

⁴ University of Toronto

⁵ Norwegian University of Science and Technology

According to Torrego (1984), resolving a filler-gap dependency inside an embedded wh-question (e.g. ‘What did the politician want to know when they would reject _?’) yields unacceptability or ‘island effects’ in English, but not in Spanish. Formal acceptability studies have disproved this claim by independently finding wh-island effects in both languages. However, a weaker version of Torrego’s claim could hold: island effects could be smaller in Spanish than English. We tested this possibility with ‘when’, ‘why’ and ‘whether’ islands in six acceptability experiments with a total of 300 Spanish-speaking and 291 English-speaking participants. Materials were lexically matched across languages. Our design manipulated the distance of the filler-gap dependency (long, short) and the structure where it was established (island, non-island), identifying island effects as a structure × distance interaction. The three clauses yielded clear island effects in both languages, and, unexpectedly, these were slightly larger in Spanish. This indicates there are no relevant cross-linguistic differences in effect size and suggests that it may not be necessary to posit parametric variation—as previous work has done—to explain the data from both languages. Our wh-island effects may be attributed to the violation of simpler, non-parameterized grammatical principles, or to processing limitations.

**Exploring differences and similarities in emotional conceptualization
between Korean and English: A GRID-based study**

Sohyoung Park¹, Hongoak Yun¹ & Donghoon Lee²

¹ Jeju National University

² Pusan National University

The question of whether emotions are socio-culturally universal or specific is an ongoing and inconclusive issue in the field of emotion studies. In this study, we attempted to investigate the similarities and differences of emotion conceptualization, through emotional terms, between Korean and English. We used the GRID questionnaires to fine-tune the psychological aspects of 24 emotional terms. 756 Korean and 640 English speakers rated the likelihood of 72 questions of six emotional components for each term. We first took a dimensional approach to examine how the emotional terms of each language were distributed in terms of valence, arousal, and power. The results from factor and clustering analyses revealed that among the 24 terms, two terms (compassion and surprise) were distributed differently between Korean and English, while the other terms were similarly distributed in both languages. Korean speakers tended to conceptualize the terms (compassion, surprise) more negatively than English speakers. Further component analyses showed that the negativity of the Korean terms was due to lower ratings in the feeling and emotion control components. We will discuss these similarities and differences between the emotional terms of English and Korean from the perspective of emotional universality and cultural specificity.

Lexical entrainment in human-machine interaction: effects of competence and attention

Greta Gandolfi ¹, Martin J Pickering ¹ & Holly Branigan ¹

¹ University of Edinburgh

Speakers entrain at the lexical level, both when interacting with humans and computerised interlocutors. Branigan et al. (2011) showed that people entrain more if they think they are interacting with a computer than a human interlocutor and with an unsophisticated computer than with a sophisticated one. While these results can be explained by audience design and priming mechanisms combined, it is still unclear how they interact. Ivanova et al. (2020) proposed that speakers allocate their attention to different interlocutors to different extents, and the more attention is paid, the more speakers are likely to be primed and entrain. In our experiment, we asked our participants to play an online picture naming and matching task with a virtual agent, presented as highly or poorly competent. Additionally, we tested the effect of attention by having participants in one group perform a secondary task. All participants also performed a surprise follow-up memory task. Participants who dedicated their full attention to the main task replicated Branigan et al.'s results, while we found the opposite pattern in the participants who performed a secondary task. Moreover, we found that participants who entrained the most are also those who are more accurate in the surprise task.

No cost for canceling causal inferences in the comprehension of short English narratives

John Duff¹, Pranav Anand¹ & Amanda Rysling¹

¹ UC Santa Cruz

Readers often enrich a text's meaning with causal inferences, e.g. an explanation in (1): Sally voted for Mirabella because of his platform. (1) Sally voted for Pat Mirabella. He has the most progressive platform. Causal inferences are known to drive on-line content expectation, but do they generate real interpretive commitments? We probe this by adding explicit 'because' explanations. These are incompatible with inferred explanations, so when they follow inference-prompting content, we should observe garden-path-like reanalysis costs, if comprehenders develop commitments to inferred meaning (as for lexical meaning). In Experiment 1 (A-Maze, https://osf.io/gf64q/?view_only=152a684014334f22bfde21aee5a85a05), participants read 'because' clauses after relative clauses which offered (im)plausible explanations (2). In Experiment 2 (https://osf.io/a4vx6/?view_only=fb61c88454ed4448914223651daeeb50), 'because' clauses occurred in two sentences after preambles like (1). Plausibility manipulations were verified in offline norming tasks. (2) Sally voted for the candidate that has a progressive platform, Pat Mirabella, because he was first on the ballot. We observe no particular reanalysis costs when plausible explanations must be canceled in either experiment. We take this to be most compatible with a model of comprehension where these inferences are considered incrementally, but do not receive firm commitment on-line.

Discourse production strategies in Greek/English heritage speakers: a corpus analysis of openings and closings

Kalliopi Katsika¹, Aikaterini Tsaroucha² & Shanley E.M. Allen¹

¹ RPTU Kaiserslautern-Landau

² Basque Center on Cognition, Brain and Language

Discourse openings and closings are defined as the linguistic material that precedes or follows the core phase of the discourse (e.g. Schegloff & Sacks 1973). Their typical functions include defining textual boundaries, introducing or closing off a new topic, orienting the addressee to what is coming next, presenting the stance of the speaker, and interpreting and evaluating the material (Berman & Katzenberger 2004, Labov 1972; Tolchinsky et al. 2002). The construction of discourse borders through openings and closings (Schegloff 2007) has been shown to be an area of dynamic difference across languages (e.g., Luke & Pavlidou 2002), but has rarely been studied in situations of language contact (cf. Dollnick & Pfaff 2013). We aim to fill this gap in the literature by investigating discourse openings and closings in Greek heritage speakers in the US in their heritage Greek and majority English. Our corpus analysis is based on the RUEG corpus (Wiese et al. 2021). In total, we analyzed oral productions of 64 monolingual Greek speakers, 64 heritage speakers of Greek in the US, and 64 monolingual US English speakers. Our statistical analyses showed differences among speaker groups in the distribution of discourse functions depending on register, age and language setting.

Reading words without sounds: deaf readers of Spanish show greater orthographic sensitivity than hearing peers

Brendan Costello¹, Sendy Caffarra², Noemi Fariña³, Jon Andoni Duñabeitia⁴ &

Manuel Carreiras^{1 5 6}

¹ Basque Center on Cognition, Brain and Language, Spain

² University of Modena, Italy

³ International University of La Rioja, Spain

⁴ Nebrija University, Spain

⁵ Ikerbasque, Spain

⁶ University of the Basque Country, Spain

Deaf skilled readers offer the opportunity to examine how reading takes place in the absence of phonological representations, and how this impacts orthographic encoding. We performed four ERP experiments with a group of 20 prelingually deaf skilled readers of Spanish and a matched group of 20 hearing readers. The experiments examined the role of letter position and identity by comparing real words with transposed letter and replaced letter pseudowords (Exp1), and letter strings with transposed and replaced letters (Exp2), visually similar letters (Exp3) and different cases (Exp4). Behaviourally, both groups showed similar patterns across conditions. The ERP results revealed that, compared to hearing readers, deaf readers were more sensitive to orthographic mismatch, especially letter identity: during word reading, replaced letters caused longer-lasting disruption in the lexical phase; for letter strings, they had earlier effects of letter identity, regardless of visual similarity or changes in case. These differences between deaf and hearing readers are not due to variations in low-level visual perception; rather they reflect a system driven by the orthographic – but not the phonological – properties of the visual input.

Event structure predicts temporal models: Evidence from English, German and Polish past-under-past relative clauses

Elena Marx¹, Oliwia Iwan² & Eva Wittenberg¹

¹ Central European University

² University of Vienna

Imagine hearing “the bird landed on the dragon on which the boy sat”. Did the boy sit on the dragon before or after the bird landed? Syntax-based theories model both orders as possible. Event cognition-based accounts argue that actions (landed-on-dragon) serve as temporal anchors for states (sat-on-dragon); since both here are in the past, only an interpretation in which the boy sat on the dragon before the bird landed is possible. Finally, pragmatic accounts see relative clauses as the backgrounds against which matrix clauses are interpreted, so relative clauses (sat-on-dragon) should always temporally precede matrix clauses (landed-on-dragon). In three pre-registered studies (German/English/Polish, N=48ea.), we test these predictions: Participants used toys to reenact main-clause--relative-clause sentences. Event type of matrix (event: landed-on-dragon/state: was-on-dragon) and relative clause (event: climbed-on-dragon/state: sat-on-dragon) were crossed. A significant interaction (analysis: mixed-effects logistic models, model comparisons) supports the event-based account: People ordered state-containing clauses first, but only if the other clause contained an event. In event-event and state-state clauses, German&Polish speakers enacted relative clauses first, supporting the pragmatic account; but English speakers only did so for event-event clauses. Our results support a multifactorial model of complex event understanding, which views linguistic framing (event/state) as crucial for setting expectations in cognitive construal.

Complexity in affixation and word length in German word recognition: An ERP study

Anna Gupta ¹, Charles Redmon ^{2 4}, Frans Plank ^{1 3}, Aditi Lahiri ^{2 3} & Carsten Eulitz ¹

¹ University of Konstanz

² University of Oxford

³ Somerville College

⁴ University of Essex

Words can be made up by adding several affixes (i.e., derivational steps) which in turn can affect word length. The current ERP study examines the contribution of morphological, phonological, and semantic factors to the processing of complex words in German. We employed a cross-modal priming task, where primes were morphologically complex words with the prefix *un-*, and their bases were used as targets. Three sets of German prime~target pairs were compared. In each set, primes differed in derivational steps, and/or number of syllables (length): (1a) one-step disyllabic: *un-weit~weit*, (2a) one-step trisyllabic: *un-sicher~sicher*, and (3a) two-step trisyllabic: either *un-freund-lich~Freund* or *un-ruhe-ig>unruhig~Ruhe*. Each set also contained corresponding semantically related primes which matched the complexity of the morphological conditions: (1b) *ent-fernt*, (2b) *ver-läss-lich*, (3b) *Ge-fähr-te*. We examined modulations of the N400 component as an index of morphological processing. Significant facilitation was found in all three morphological conditions, with no differences between them. Semantic priming was smaller in magnitude and significant only in condition (3b). These results suggest that neither the morphological complexity of a derived word nor its length constrained decomposition; access to the base was achievable. Furthermore, the facilitation we observed for the morphological conditions was not merely based on semantic overlap.

Extrapolation of long relative clauses facilitates processing

Nasimeh Bahmanian¹ & Sol Lago¹

¹ Goethe University Frankfurt

Relative clause extrapolation (RCE) involves the displacement of a relative clause from a noun-adjacent to a clause-final position: “A man entered the bank who claimed to have a gun”. It is an open question why extrapolation occurs since it creates a distant and discontinuous dependency, which is proposed to be harder to process. Prior research proposed that extrapolation may result from a short-before-long preference: consistent with this, RCE sentences are read faster when the relative clause is longer than the verb phrase. Recent research in English also claimed that syntactic factors may play a role, with extrapolation being more common with unaccusative appearance verbs vs. other intransitive verbs. We tested the crosslinguistic generalizability of these claims using a speeded judgment task in Persian. Our 3x2 design included three verb types (unaccusative- appearance and non-appearance, and unergative) and two relative clause conditions (adjacent/extrapolated; RC length 7-8 words). RCE and non-RCE sentences were accepted similarly often (range: 87-95%), and response times were faster for RCE than non-RCE sentences, consistent with eased processing due to extrapolation. However, there was no evidence that these effects differed between verb types. This suggests that the role of positional (short-before-long) and syntactic factors may differ crosslinguistically.

Mouse Tracking for Reading (MoTR): A New Incremental Processing Paradigm

Ethan Wilcox¹, Cui Ding², Ryan Cotterell¹, Lena Jäger² & Mrinmaya Sachan¹

¹ ETH Zürich

² University of Zürich

We present Mouse Tracking for Reading (MoTR), a new incremental processing measurement paradigm that simulates eye-tracking. MoTR runs in the browser, enabling cheaper data collection, and collection in places where no eye-tracking equipment is available. In a MoTR trial participants are presented with text that is blurred, except for a small in-focus region around the tip of the mouse. Participants move the mouse over the text, bringing individual words into focus in order to read. Mouse movement is recorded, and can be analyzed similarly to eye-tracking data. We implement MoTR experiments in Magpie and validate it in two suites of experiments. First, we record MoTR data for the Provo Corpus, for which eye-tracking data exists. We find strong correlations between eye-tracking and MoTR reading times (RTs) from 0.67-0.78. In an analysis similar to Smith and Levy (2013), we find a linear effect on MoTR RTs of by-word surprisal (estimated from GPT-2). Second, we conduct a cross-methodological replication of three experiments from Witzel et al., 2012 and Boyce et al., 2020 that test preference for high vs. low attachment. MoTR RTs replicate previous self-paced reading results and novelly reveal how regressions are implicated in the processing of these phenomena.

Determiner asymmetry in Arabic-English code-switching: Evidence against the Matrix Language Frame model

Ji Young Shim¹, Heeju Hwang² & Tommi Leung³

¹ American University of Sharjah

² University of Hong Kong

³ United Arab Emirates University

When switching between a determiner and a noun, bilinguals prefer the determiner in one of their two languages, resulting in an asymmetrical pattern. The so-called determiner asymmetry in code-switching has been explained by the Matrix Language Frame (MLF) model, which states that the ML provides functional categories such as determiners in bilingual speech. We tested the validity of the MLF model in Arabic-English code-switching. In two experiments, we examined whether Arabic-English bilinguals preferred a code-switched sentence with the determiner from the ML. The ML was Arabic (Exp1, N=25) or English (Exp2, N=31) and the determiner came from Arabic or English (e.g., Exp1: *يا دا دك لهم كراسي* vs. *يا دا دك لهم كراسي بعد خربان*; the *كراسي*; Exp2: *Wow, look at the كراسي* vs. *Wow, look at ال chairs*). Participants were asked to choose one that sounded more natural between the two minimally-paired sentences. We found that the MLF model was supported only when the ML was Arabic, not English ($p < .05$), indicating that determiners were strongly preferred in Arabic regardless of the ML. We suggest that while the ML plays a role in code-switching, predictions made by the MLF is too strong and need to be reconsidered.

Processing singular “they/their”: Individual differences in political ideology, empathy, emotionality, and honesty affect reading times and acceptability ratings

Hannah Lam¹ & Juhani Järvikivi¹

¹ University of Alberta

Research has shown a processing cost for singular ‘they’ when it refers to stereotypically gendered nouns, as in *“The secretary was walking in the park when she/he/they saw a fat squirrel”. ‘They’ is read slower than congruent pronouns (e.g., secretary-she), and faster than incongruent pronouns (e.g., secretary-he). Furthermore, ‘they’ is rated less acceptable than both congruent and incongruent gendered pronouns. Using self-paced reading and acceptability rating, we studied the processing of sentences with gender-neutral nominative ‘they’ and genitive ‘their’ compared to their gendered counterparts, and whether participant-based (N=201) differences in personality (HEXACO PI-R) and political ideology affect reading times and ratings. Generalized-additive mixed-models showed significant differences in reading and rating ‘they’ compared to congruent feminine “she/her” but not to congruent masculine “he/his” pronouns. Nominative ‘they’ is read faster and rated better than genitive ‘their’. Individual differences were found to modulate processing of ‘they’ pronouns. We found that conservative participants took longer to read and gave lower ratings for ‘they’ pronouns than congruent pronouns. Less empathetic participants took longer to read ‘they’ pronouns than congruent masculine pronouns (e.g., soldier-he). Participants who scored lower on emotionality and honesty rated ‘they’ pronouns significantly worse than congruent feminine pronouns.

Czech number agreement attraction: Modifying attractors with relative clauses

Radim Lacina^{1 3} & Jakub Dotlačil²

¹ Osnabrück University

² Utrecht University

³ University of Potsdam

Agreement attraction effects in comprehending sentences such as '*The key to the cabinets were rusty' have been documented across languages. Researchers have proposed cue-based retrieval models to explain them. However, recent studies show that in Czech, attraction is either not present at all or tiny in size (Lacina & Chromý, 2022; Chromý et al., under review). We tested whether the effects in Czech could be strengthened by increasing the degree of feature-match between the verb and the attractor. We attempted this by modifying the attractor with a relative clause, thus giving it the subject feature. We ran a web-based word-by-word self-paced reading study with Czech comprehenders (N = 280) and analysed the post-verbal region RTs with Bayesian models, where we found evidence of an attraction effect. We compared our estimates to those of Exp 4 in Chromý et al. (under review). Contrary to our hypothesis, the data showed a similar, only slightly larger effect (median: $-0.008\log\text{-ms} = -6.9\text{ ms}$, 89% CrI: $[-0.013, -0.003]$) to that found previously ($-0.0045\log\text{-ms} = -4\text{ ms}$, 89% CrI: $-0.010, 0.001$). In future work, we aim to test whether simply increasing the distance between the attractor and the verb produces similar effects.

Semantic roles inform sentence processing in 6-year-old Basque children

Arrate Isasi-Isasmendi ^{1 2}, Sebastian Sauppe ^{1 2}, Caroline Andrews ^{1 2}, Martin Meyer ^{1 2 3} & Balthasar Bickel ^{1 2}

¹ Department of Comparative Language Science, University of Zurich

² Center for the Interdisciplinary Study of Language Evolution (ISLE), University of Zurich

³ Cognitive Psychology Unit, University of Klagenfurt

Comprehenders tend to interpret role-ambiguous arguments as the agent of the sentence during parsing. This agent preference is robust cross-linguistically and is possibly linked to a general cognitive bias for agents in cognition. Despite this ample literature, it is fairly unknown whether children use semantic role information to guide sentence processing. In an auditory EEG experiment, we explored the interpretation of ambiguous noun phrases in 6-year-old Basque children (N=32). We exposed children to subject-verb intransitive sentences and we manipulated whether the initial noun phrase was ambiguously marked or not, and whether its role was agent or patient. We hypothesised that if 6-year-old children already use semantic role information, disambiguations to patients should lead to reanalysis effects, in line with the agent preference in adults. We additionally presented children with semantically congruent and incongruent sentences as control conditions for semantic reanalysis effects. As expected, ERP results showed an N400 effect for the incongruent sentences compared to congruent ones. Critically, disambiguations to patient also elicited a negativity over posterior electrodes compared to disambiguations to agents, thus pointing to reanalysis effect. Our results suggest 6-year-old Basque children already use semantic role information independently of other cues to guide sentence processing.

Crosslinguistic patterns of anaphor resolution in English, German, and Polish

Elena Marx¹, Oliwia Iwan² & Eva Wittenberg¹

¹Central European University

²University of Vienna

Across languages, pronominal systems carve out the reference space in different ways. Here we compare predictions from accessibility-based (Gundel et al. 1988, 1993) and reference-specific (Kaiser & Trueswell, 2011; Wittenberg et al., 2021) accounts of pronoun resolution, examining cross-linguistic differences between demonstrative and simple pronouns: English, German, and Polish were contrasted as languages with meaningfully different complexities in their pronominal paradigms. We asked participants (N=48ea.) to enact short stories like “The pilot put the broom into the basket. Then he placed it/that next to the horse.” with toy figurines, analyzing their choices of referent as a function of pronoun type. Results (analysis: mixed-effects logistic models, model comparisons) confirm previous data (Brown-Schmidt et al., 2005) that simple pronouns tend to refer to most salient simpletons (broom), and demonstratives to conceptual composites (basket+broom). However, this pattern was modulated across languages: the more differentiated a language’s specific pronominal paradigm, the more likely its pronominal form refers to simpletons. Overall, our results support and add empirical nuance to reference-specific accounts of pronominal reference, showing that speakers keep track of a variety of linguistic and conceptual factors, with factor weights differing predictably depending on each language’s pronominal system.

**Cognitive control underpins spoken language and reading comprehension:
Insights from internet-mediated mouse cursor tracking**

Anuenue Kukona¹ & Nabil Hasshim²

¹University of Greenwich

²De Montfort University

What are the mechanisms that underpin sentence comprehension, and how do these compare across (i.e., spoken and written) modalities? Two internet-mediated mouse cursor tracking experiments investigated the link between cognitive control and syntactic processing. Participants heard (Experiment 1) or read (Experiment 2) garden path sentences like ‘Put the kiwi on the rectangle on the circle’, in which ‘on the rectangle’ could temporarily reflect either a (i.e., incorrect) destination of ‘Put’ or modifier of ‘kiwi’, as well as unambiguous controls, and viewed visual arrays with a kiwi on a rectangle and an empty rectangle and circle. Interleaved among sentence trials, participants completed either mostly congruent or mostly incongruent Stroop trials, such that the latter was hypothesised to engage cognitive control (e.g., see also Hsu & Novick, 2016). Garden path mouse movements to incorrect destinations (e.g., rectangle) were reduced with mostly incongruent vs. mostly congruent Stroop trials across experiments and reading time effects were also reduced in Experiment 2. These results suggest that comprehension is causally supported by cognitive control across (i.e., spoken and written) modalities.

Hanging clothes in the refrigerator: Reversed bias in counterfactual semantic integration

Chengjie Jiang¹ & Ruth Filik¹

¹ University of Nottingham

Successful language comprehension requires integration of comprehenders' knowledge of the real world and the context. Studies have found that implausible information induces processing difficulty unless licensed by the context. However, it remains unclear how context and world knowledge interact in counterfactual contexts, where both plausible and implausible information seem acceptable. To address this question, we conducted a self-paced reading experiment in which participants read word-by-word factual or counterfactual contexts (e.g., "Mary is telling her friends what she did/dreamt yesterday") containing either plausible or implausible information (e.g., "she ... hung her clothes in the wardrobe/refrigerator ..."). We found longer reading times for implausible than plausible information in factual contexts. While this effect was detected in early counterfactual comprehension, it gradually diminished and ultimately reversed towards the end of the sentence. These findings suggest that counterfactual comprehension is initially guided by world knowledge. However, context becomes increasingly important and finally overrides world knowledge during semantic integration at the sentence-final position. This study indicates potential extensions for the Resonance-Integration-Validation Model (RI-Val), highlighting that language comprehension is more than validation against context or plausibility – information unrelated to anything in active memory may still be perceived as more likely to occur in certain contexts.

If you hear something (don't) say something: A dual-EEG study on sentence processing in conversational settings

Elli Tourtouri¹ & Antje Meyer^{2,3}

¹ Institute of Cognitive Science, Osnabrueck

² Max Planck Institute for Psycholinguistics, Nijmegen

³ Radboud University, Nijmegen

Due to the rapid turn-taking in everyday conversation, speakers usually start planning their utterances while still listening to the previous turn. Little is known, however, regarding how this linguistic dual-tasking affects both production and comprehension processes. In a dual-EEG study, we examine two possibilities: (a) planning of the next turn interferes with comprehension and hinders processing of the current turn; (b) planning of the next turn enhances attention to what is being said benefiting processing. Two participants were simultaneously exposed to the same stimuli: a picture displaying a simple event (e.g., a boy petting a dog) and an auditory description of the picture (in Dutch). In half of the experimental trials, the description matched the picture (Matching condition), and in the other half it did not (Mismatching condition). Crucially, mismatching utterances differed from their matching counterparts only in the final word (e.g., The boy is petting the dog/cat). One participant (Addressee) replied to the pre-recorded descriptions in full sentences, while the other (Bystander) listened for comprehension and evaluated the Addressees' responses. Preliminary data indicate a N400/P600 complex for both participants. Results are discussed in the context of "depth" of processing and co-representation in conversational settings.

Learning from prediction error during L2 sentence processing

Duygu Şafak¹ & Holger Hopp¹

¹ Technische Universität Braunschweig

Against the backdrop of claims that L2 learners show reduced predictive processing (e.g., Grüter et al., 2021), this study tests whether L2 learners recruit error-driven prediction mechanisms for learning in a priming experiment using visual world eye-tracking. We explore how L2 learners adapt structural predictions when ditransitive verbs biased to either the double-object (DO) or the prepositional-object (PO) structure occur in the other structure. Adult L1-German–L2-English learners (n = 48) first read prime sentences crossing Verb Bias (DO-bias/PO-bias) and Structure Type (DO/PO). Subsequently, they listened to target sentences – with non-biased verbs – while viewing visual scenes with corresponding referents. Cluster-based permutation analyses showed PO-priming, as evidenced by significantly higher proportions of looks to the theme over the recipient during the postverbal temporal region in target sentences after PO (vs. DO) prime sentences. Additionally, results revealed surprisal effects of verb bias on PO-priming, as priming effects were larger when prime structure mismatched the bias of the prime verb, i.e., after PO prime sentences with DO-bias verbs than with PO-bias verbs. We conclude that, like for L1 speakers (Chen et al., 2022), prediction error drives implicit learning in an L2.

Prediction and age-related hearing impairment

Leigh Fernandez ¹, Muzna Shehzad ² & Lauren Hadley ²

¹RPTU Kaiserslautern-Landau

²Hearing Sciences - Scottish Section, School of Medicine, University of Nottingham

Age-related impairments to the auditory system can diminish the perception of speech and relevant extra-linguistic information, but little research investigates age-related hearing impairment (HI) and prediction. Prediction is a particularly promising area of investigation/intervention with HI given that it can serve as a scaffold in difficult listening situations. In this visual world paradigm study we investigate not only Predictable and Unpredictable items, but how listeners recover when a sentence is predictable (e.g., The tailor trims the...) but ends in an unexpected but Plausible way (e.g., tree). We test three age-matched groups ($M_{age}=70.72$, $SD_{age}=6.12$): (1) participants with normal hearing (NH) listening to stimuli at 70dB, (2) participants with HI listening at 70dB, and (3) participants with HI listening at a level ensuring high intelligibility and the speech rate of the stimuli. Our results (controlling for several individual differences) showed that all groups exhibited predictive processing, with no differences in timing of looks (divergent point analysis). However, using GAMMs, we see that speech rate impacted the HI groups more in the predictable condition than the NH group. Furthermore, in the Plausible items, all groups quickly shifted attention from the predicted to the unexpected but plausible target, but HI groups exhibited more competition.

Situational-functional settings affect evaluation of linguistic register

Katja Maquate¹, Olga Buchmüller¹, Guendalina Reul², Esmá Tanis-Cosgun³ & Pia Knoeferle^{1 4 5}

¹ Humboldt-Universität zu Berlin

² Universität zu Köln

³ IU International University of Applied Sciences

⁴ Einstein Center for Neurosciences Berlin

⁵ Berlin School of Mind and Brain

Although real-time studies point to a tight link between social context and lexical processing, evidence regarding a) explicit sentence judgements, b) social context and grammatical processing and c) socially-situated context and sentence register processing is less clear. In three rating studies (N=32 each), we investigated the influence of the socially-situated context on sentences that (mis)matched in (in)formal register or that (mis)matched in verb-argument / subject-verb congruence. Moreover, exploratory analyses investigated whether context presentation modality (written vs. auditory vs. pictorial) affects ratings as markers of linguistic performance. Participants rated register matching (vs. mismatching) sentences sign. higher in acceptability for pictorial and sign. higher in grammaticality for auditory contexts. Crucially, the interaction between register and semantic verb-argument congruence was significant, revealing that participants rated semantically incongruent sentences as more grammatical only when the register matched with the visually-depicted context. Hence, the situational-functional context seems to influence the assessment of sentence register, which, in turn, seems to affect the perception of semantic congruence of a sentence. Moreover, a pictorial situational-functional context seems to be integrated more easily with a following sentence when participants rated the acceptability of the sentence, while an auditory context can be integrated more easily when participants rated its grammaticality.

Elders and low-literacy readers struggle with official documents featuring non-obligatory control gerund in Italian

Stefano Rastelli¹, Pietro Mingardi¹, Beatrice Iaria¹, Valerio Damiani¹, Giada Antonicelli², Paolo Canal³ & Francesca Pagliara¹

¹ Università di Pavia

² Basque Center on Cognition, Brain and Language

³ IUSS - Pavia

Although Italy lies at the bottom of PIAAC literacy rankings, laws and regulations remain obscure to most of the population. Early attempts of providing plain language policies have lately been abandoned. Non-obligatory control gerund (NOCG) is key in bureaucratic Italian because it conceals Argument Structure ('who is doing what to whom': e.g., *Riducendo il trattamento, i pazienti rimangono contagiosi più a lungo* 'reducing the therapy, patients remain contagious longer'). We tested 47 Italian native speakers of various ages and literacy with a similarity-judgment SPR. Participants read sentences featuring NOCG (target) followed by a matching or mismatching simplified periphrasis featuring a finite verb (probe). Participants evaluated if the probe matched the target. Target-stimuli were adapted from .gov documents on the web. We tested if probe's (log-transformed) reading times were affected by participants' literacy and age using an LMM model. We tested accuracy and (log-transformed) RTs in the evaluation task using a GLMM model with a binomial distribution and an LMM, respectively. We found that: (i) 33% of responses were inaccurate; (ii) older readers were significantly slower and less accurate; (iii) low-literacy readers were significantly less accurate. We argue that NOCG is functional for government agencies to pursue unintelligible communication systematically.

Do comprehenders use cognitive control to resolve morphosyntactic conflicts during prediction?

Elise Oltrogge¹, João Veríssimo², Shravan Vasishth¹ & Sol Lago³

¹ University of Potsdam

² University of Lisbon

³ Goethe University Frankfurt

Previous research has shown that comprehenders predict upcoming words, but that predictions are not always grammatically licensed. For example, a recent visual world eye-tracking study by Stone et al. (2021) demonstrated a case of grammatically unlicensed predictions in German possessive pronouns; this so-called “match effect” was attributed to the conflict between different morphosyntactic features. It has been proposed that domain-general cognitive control is necessary to resolve other cases of conflict in language processing—for example, garden-path effects. We addressed whether cognitive control is also used to arbitrate between conflicting morphosyntactic features with possessive pronouns. With 78 adult German speakers, we replicated the match effect reported by Stone et al. (2021): a reduced prediction effect in feature conflict vs. non-conflict conditions. Additionally, we assessed participants’ cognitive control by quantifying their scores in Stroop and Flanker tasks. However, we failed to find an influence of these by-participant scores in the size of the match effect in the eye-tracking task. We suggest that grammatically unlicensed predictions in cases of morphosyntactic conflict result from language-specific—not domain-general—conflict resolution mechanisms.

Reflexive resolution in European and Brazilian Portuguese

Paula Luegi¹, Márcio Leitão², Daniela Avila-Varela¹, Jéssica Gomes¹ & Armanda Costa¹

¹University of Lisbon, School of Arts and Humanities, CLUL

²Federal University of Paraíba, LAPROL

We present the results of two self-paced reading experiments to tease apart retrieval and encoding interference in resolving gender-marked and unmarked reflexives in two Portuguese varieties (European – EP; Brazilian – BP). We test two conditions, ex.(1)-(2), with: (a) referents gender match/mismatching; (b) unmarked reflexives with(out) reinforcement. In BP (b) had either a gender-unmarked reflexive or a gender-marked reinforcement (ex.(2): only “se” or “si mesma/o” was presented). (1) A Ana_FEM/O Pedro_MASC disse que a Maria_FEM ontem se_Reflex_NO-GENDER vestiu (a si mesma_Reinf_FEM)... (2) A Ana_FEM/O Pedro_MASC disse que a Maria_FEM ontem (se_Reflex_NO-GENDER) vestiu (a si mesma_Reinf_FEM)... Hanna/Peter said that Mary yesterday dressed SELF_Reflex_NO-GENDER (on-her-own_Reinf_FEM)... Since the reinforcement element obligatorily follows the gender-unmarked reflexive in EP, BP will allow testing the effect of both gender-marked and unmarked reflexives separately. Method: 32 items (+64 fillers); final questions checking reflexive resolution. EP: 84 participants. BP data is being collected. Results in EP show: lower accuracy and higher RTs on questions after gender-matching conditions; slower RTs when reading reflexives region on gender-matching conditions. No effect of Reflexive-Type. Overall results support encoding interference: harder to activate an entity when another one shares a similar feature, even if that feature is not useful for the linguistic process involved.

The effect of iconic gestures on linguistic prediction in Mandarin Chinese: a visual world paradigm study

Xuanyi Chen ^{1,2}, Junfei Hu ³, Falk Huettig ^{2,1} & Aslı Özyürek ^{2,1}

¹Radboud University

²Max Planck Institute for Psycholinguistics

³University of Louvain

Language is multimodal in nature, and multimodal cues like iconic gestures contain semantic information that can be useful for language comprehension. In fact, prior corpus analyses have shown that iconic gestures tend to precede their lexical affiliates (e.g., verbs), suggesting that semantic information can be available from iconic gestures before speech. Here, we investigate whether iconic gestures depicting actions (e.g., playing piano) would contribute to linguistic prediction in Mandarin Chinese where nouns follow verbs. We extend the classic visual world paradigm to include a speaker in the middle of screen producing an iconic gesture with gestural stroke starting 700ms prior to the relevant verb onset. In each trial, participants either listened to a sentence with (gesture and speech) or without (speech only) a gesture or a sentence where the critical verb is replaced by a disfluency sound ‘umm’ with a gesture (gesture only). Preliminary results show more eye-gaze to the target picture related to the noun in the sentence (e.g., piano) prior to the verb onset (e.g., play) when iconic gestures are present than are absent, suggesting the semantic information in iconic gestures could benefit linguistic prediction prior to and even in the absence of speech.

Anticipating the ...

Camilo R. Ronderos¹ & Filippo Domaneschi²

¹ University of Oslo

² University of Genoa

Theoretical accounts of negative expressives such as damn and fucking have ascribed different properties to this type of adjectives: They convey a content that is independent from truth-conditional meaning, they are typically speaker-oriented, and they can be syntactically flexible. However, it is not clear what this means during online sentence processing. For example, is it effortful for comprehenders to derive the speaker's negative attitude conveyed by an expressive adjective, or is it a rapid, automatic process? And do comprehenders understand the speaker's attitude regardless of the expressive's syntactic position? The current work provides first evidence supporting theoretical claims by investigating the incremental processing of Italian negative expressive adjectives. In an eye-tracking study, we show that expressive content is rapidly integrated with information about the speaker's attitude, resulting in the anticipation of an upcoming referent, regardless of the expressive's syntactic realization. We argue that comprehenders use expressives as an ostensive cue that allows for automatic retrieval of the speaker's negative attitude.

Does prediction enhance language comprehension?

Hui-Ching Chen¹ & Aine Ito¹

¹National Singapore University

It is known that people predict during comprehension, but it is unclear to what extent prediction is (non-) automatic and whether enhancing prediction will facilitate language comprehension. Therefore, in the current study, we aim at investigating how enhance prediction may help to better comprehend language and to what extent the phonological information prediction would engage during sentence processing by using a sentence picture comprehension task with the Visual-World-Paradigm. The task includes two blocks, the comprehension block and the prediction block. In the comprehension block participants were asked to listen to the sentences while viewing some objects and click on the mentioned items as soon as possible when in the prediction block, participants were asked to predict what might happen next and click on the mentioned items while listening to the sentences. The preliminary results (8 participants) showed that people performed faster and have more looks to the mentioned items when their prediction was boosted comparing to when there was no prediction enhancement (Mouse-clicked results: $b = -960.64$, $Z = -5.89$; $p < .001$; Eye-fixation results: $b = -0.37$, $Z = -2.64$; $p = .007$). Overall, enhancing prediction does facilitate language comprehension according to our pilot data.

Morpho-syntactic agreement in English and the perception of speech in noise

Marcel Schlechtweg¹

¹ Carl von Ossietzky Universität Oldenburg

In English, we can find overt morpho-syntactic agreement between a determiner and a noun (see 1) as well as between a noun and a verb (see 2). (1) a. The cabs broke down. b. These cabs broke down. (2) a. The cabs broke down. b. The cabs break down. In (1a), the does not provide information about whether cabs is singular or plural, hence there is no overt number agreement between the two. In contrast, these in (1b) indicates that the noun is plural. In (2a), the verb broke does not signal that the preceding noun is plural; broke can occur with both singular and plural nouns. In (2b), however, break points to the plurality of the noun (since the verb would be breaks for a singular noun). The study examines whether the presence of these different types of overt morpho-syntactic agreement influences how well native speakers perceive the plural information in noise, specifically when additional speakers in the background make speech perception harder (background babble noise). We measure reaction accuracy and time in a forced-choice task, and interpret the results against the background of how grammatical relations between words affect the way language users perform in adverse listening conditions.

Stick a pen in it: Greater phonological competition in speakers with the pin-pen merger

Ebony Pearson¹, Van Licalalde¹, Wei Lai¹ & Duane Watson¹

¹Vanderbilt University

Language perception requires integrating incoming acoustic input into the stored phonological representations in our mental lexicon. In bilinguals, these phonological representations activate both lexicons even in a monolingual setting, resulting in lexical competition. Here, we explore whether similar competition is elicited by dialectal differences. Our case study is the pin-pen merger in Southern US and African-American English, where the phonemes /ɪ/ and /ɛ/ merge before nasal consonants but are pronounced distinctly without the merger. Using a visual world eye-tracking paradigm, merged and non-merged speakers (as determined via a separate production task) listened to audio recordings of words produced with the /ɪ/ phoneme by a nonmerged speaker. Participants selected the image that best matched the lexical item they heard. The images presented included a target (pin), a competitor (pen), and two distractors. Merged speakers exhibited greater competition than nonmerged speakers as shown by longer reaction times and increased looks to competitors. These results indicate that hearing the /ɪ/ phoneme creates a period of ambiguity in merged speakers due to competing phonological representations, even when listening to productions by a nonmerged speaker. Similar to bilinguals, we see activation of contextually non-relevant lexical items, suggesting parallel activation across a speaker's dialects.

The McGurk Effect in Russian listeners

Elena Riekhakaynen¹ & Elena Zatevalova¹

¹ St. Petersburg State University

The McGurk effect occurs when listeners cannot correctly determine what they hear if the movements of the speaker's lips do not correspond to the audio signal (McGurk, McDonald 1976). The goal of our paper is to find out those combinations of sounding syllables and lip movements for which this effect would be the strongest for Russian listeners. The stimuli were made from video recordings in which a native Russian speaker pronounced the syllables [ta], [da], [pa], [ba], [fa], [va]. We prepared six stimuli in which the audio and video sequences coincided, and 12 incongruent stimuli which were supposed to provoke the McGurk effect. 120 participants had to decide what the speaker said choosing one of the six proposed answers or giving their own variant. The number of correct answers (in which the participant identified correctly what was pronounced) depended on which pair of syllables was combined in the stimulus. The most common errors were found when the syllable [ba] or [pa] sounded, while the speaker pronounced [va] or [fa] on the video. We did not observe the influence of the preferred modality of perception on the total number of correct answers.

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**Global perspectives on speech and language therapy training and practices
for multilingual people with aphasia**

Marie Pourquié¹, Seckin Arslan^{2 16}, Suzan Dilara Tokaç-Scheffer³, Ritienne Grima⁴,
Valantis Fyndanis^{5 6}, Maria Kambanaros⁷, Silvia Martinez Ferreiro^{8 9}, Amaia Munarriz-
Ibarrola¹⁰, Monica Norvik⁵, Claudia Penalzoza¹¹, Grégoire Python¹², Eva Soroli¹³, Wei Ping
Sze¹⁴, Mohammed Taiebine¹⁵ & Group Multilingual Aphasia Practice¹⁷

¹ IKER (UMR 5478); ² Université Côte d'Azur, Laboratoire Bases, Corpus, Langage (BCL); ³ University
of Groningen; ⁴ University of Malta; ⁵ University of Oslo; ⁶ Cyprus University of Technology; ⁷
University of South Australia; ⁸ INIBIC-University Hospital of A Coruña (CHUAC); ⁹ University of A
Coruña; ¹⁰ University of the Basque Country; ¹¹ University of Barcelona, Institute of Neurosciences; ¹²
University of Geneva; ¹³ Université of Lille (UMR 8163); ¹⁴ University College London; ¹⁵ International
University of Casablanca; ¹⁶ CNRS; ¹⁷ Collaboration of Aphasia Trialist

Multilingual people with aphasia (MPWA) often present differential deficits across the languages they speak and may experience difficulties accessing effective professional services conform to their multilingual characteristics. To date, no global survey has been conducted to identify speech and language therapists' (SLTs) common practices when providing clinical services to MPWA, and to assess their perception on their training, practices and availability of multilingual assessment tools and treatment resources. To fill this gap, an international interdisciplinary group within the Collaboration of Aphasia Trialists network developed a survey, specifically for professional SLTs, on multilingual aphasia resources and practices, including four sections: 1. Demographic information; 2. Education and training; 3. Clinical services for MPWA; and 4. Clinical tools and therapy for MPWA. It is available in diverse languages (e.g., Arabic, Basque, Dutch, English, French, Galician, Greek, Italian, Mandarin Chinese, Norwegian, Spanish, Turkish). Preliminary findings will be discussed addressing SLTs' MPWA caseload, educational training in multilingualism, use of assessment tools and strategies to provide treatment to MPWA, and the degree of satisfaction with the available resources to provide appropriate clinical services. Such data constitute a rich source of information on how the language-impaired multilingual brain is currently assessed and treated by SLTs worldwide.

A verbal and non-verbal task battery for first- and second-order theory of mind - data from adults and primary school children from Germany and Greece

Anna Czypionka¹, Maria Andreou², Dafni Bagioka³, Angelika Golegos¹, Theo Marinis¹,
Eleni Peristeri⁴ & Arhonto Terzi³

¹ University of Konstanz, Konstanz, Germany

² University of Peloponnese, Kalamata, Greece

³ University of Patras, Patras, Greece

⁴ Aristotle University of Thessaloniki, Thessaloniki, Greece

Theory-of-Mind (ToM) is the ability to understand that others' mental states may differ from one's own. ToM-abilities are often assessed with False-Belief (FB) tasks (monitoring consideration of (a) person.A's beliefs (first-order-FB) and (b) person.A's beliefs about person.B's beliefs (second-order-FB)). Language skills predict ToM-abilities, with low-verbal autistic children (LVAC) showing poor FB-task-performance. Available ToM-tasks involve complex language, raising questions whether LVAC's poor performance is due to language demands or true ToM-deficits. Still, no low-verbal tasks assess both first- and second-order-FB together. Our first- and second-order-FB assessment toolkit is available in verbal (Greek, German) and non-verbal versions and consist of video clips of 19 different scenarios. We present data from three neurotypical (NT) participant groups: (1) Adults (n(Greek)=50, n(German)=50): better performance in first-order-FB than second-order-FB, better in verbal than non-verbal versions. (2) Children, 1-2-graders (n(Greek)=50, n(German)=ongoing*): better performance in true-belief (TB) than FB; better in non-verbal than verbal versions. (3) Children, 3-4-graders (Greek, German)*: Ongoing data collection. *aim=50 each Language supports adults but adds processing cost for young schoolchildren during FB-tasks. Data from 3-4-graders will show development of ToM-abilities and language use throughout primary-school. Since young NT-children perform better in nonverbal FB-tasks, we predict the toolkit is useful for ToM-assessment in LVAC.

Lexical processing and language interference in Bilingual children with and without Developmental language disorder (DLD)

Stephanie Martin Vega¹ & Laurel Lawyer¹

¹ University of Essex

When talking about bilingualism in typically developed children, attitudes have shifted greatly towards accepting this as healthy and advantageous (Paradis, 2010). Some have suggested that children who present with language disorders are unsuitable candidates for dual-language learning because of their limited capacity for language would be overtaxed by learning two linguistics systems (Kroll 2015). This study aims to explore the differences in lexical processing in Spanish-English bilinguals, both with and without DLD. A lexical decision and a Stroop task were performed while EEG was recorded. 34 DLD Chilean Spanish-English Bilinguals and 32 TD bilinguals, ages 7 to 10, took part in the study. Results show the presence of an N400 brain signal in non-words for the TD group and similar results for the DLD group. This shows that DLD children perform similarly in the lexical decision task as their TD peers. In the Stroop task, results show a Stroop effect in both English and Spanish incongruent condition in both groups. These results show that there is a similarity in lexical processing for TD and DLD children. Results show no statistical difference between the performance of both groups, showing a similarity in lexical processing for TD and DLD children

MorphoPlay: morphological awareness assessment with a game mobile app

Carina Pinto^{1 2 3 4}, Alina Villalva^{5 2}, Cândida G. Silva^{1 3}, Eduarda Abrantes^{6 7 8}, Etefvina Lima^{1 3}, Joana Miguel^{9 10 11 4}, Rafael Minussi^{12 13 4}, Sydelle de Souza^{4 2 4}, Afonso Simão⁶, Carlos Guerra⁶, Catarina Lavos¹, Marta Fortes⁶, Marta Sousa¹ & Raquel Espirito Santo¹

¹ School of Health Sciences, Polytechnic of Leiria, Portugal; ² Linguistic Center Of University of Lisbon, Portugal; ³ Center for Innovative Care and Health Technology (CiTechCare), Polytechnic of Leiria, Portugal; ⁴ The Word Lab, Portugal; ⁵ School of Arts and Humanities of University of Lisbon, Portugal; ⁶ School of Technology and Management , Polytechnic of Leiria, Portugal; ⁷ Computer Science and Communication Research Centre, Polytechnic of Leiria, Portugal; ⁸ Computer Graphics and Multimedia Research, Polytechnic of Leiria , Portugal; ⁹ CAIDI, Portugal; ¹⁰ João de Deus School of Education, Lisboa, Portugal; ¹¹ NOVA School of Science and Technology; ¹² Federal University of São Paulo, Brasil; ¹³ LabLinC; ¹⁴ UKRI Centre for Doctoral Training in Natural Language Processing, University of Edinburgh, Scotland

MorphoPlay is a research project that aims to design a game for language therapy sessions that assesses the degree of morphological awareness in children between 7 and 10 years old, particularly in Portuguese. Existing test batteries for assessing language development deviations in children typically ignore the morphological features of words, which is what MorphoPlay aims to address. The project includes three components: a word processing study; testing with children with normal development and children with special education needs; and game development. The word processing study is based on a corpus of derivatives, including agentive nouns and semantically distinct derivatives, and simple agentive nouns, to identify crucial morphological features for the game design. Testing involves a free word association task and a lexical decision test, which establish a baseline for clinical trials. The game development includes a lexical decision task and three association tasks to assess response accuracy. Overall, MorphoPlay is an innovative initiative that could improve language development assessments and targeted language therapy interventions for children. By incorporating morphological features into the game design and testing, MorphoPlay could enhance the accuracy and efficacy of language therapy sessions, particularly in Portuguese, and could be applicable to other languages.

Gender but not DLD differentiates children performance in SRT task

Martyna Bryłka¹ & Hanna Cygan¹

¹Bioimaging Research Center, The Institute of Physiology and Pathology of Hearing

Developmental language disorder (DLD) affects a child's ability to acquire and use their native language. It has been postulated that the impaired language acquisition of children with DLD is a consequence of impaired statistical learning. Twenty-seven children with DLD and 31 children in an age- and IQ-matched control group took part in the study. Participants were tested with the Language Development Test, Stanford-Binet IQ scale (SB5), and their ability to acquire statistical information was verified using a serial reaction time (SRT) task. The results showed that the groups did not differ significantly in their reaction times on the SRT task. The model showed a significant learning effect for both groups and a significant simple effect of gender, and age. Additionally, we noted a significant interaction effect between reaction time in the SRT and gender. Girls, irrespective of language level, presented significantly greater differences in RT between random and statistical block, while in the boys' group we noted no change in RT when comparing statistical block with random block. The results suggest that the ability to acquire statistical information in the SRT paradigm is not dependent on developmental language disorders and more on gender and age.

Word-specific lexical inhibition due to violated predictions

Ella Yakir¹ & Aya Meltzer-Asscher¹

¹Tel-Aviv University

Past research has suggested that lexical inhibition is involved in coping with plausible violations of lexical predictions (Ness & Meltzer-Asscher, 2018). The current study aimed to examine the scope of lexical inhibition. We hypothesized that this inhibitory process affects only the predicted word, rather than a wider field of related words. In a cross-modal lexical priming experiment, participants listened to sentences in which the direct object was highly predicted, and then performed a lexical decision task, in which the probe was either the predicted word or a word related to it. The 24 experimental sentences ended either with a congruent completion, which was not related to the predicted or related probe words, or with a pause following the verb (see (1)). (1) When Anat finished baking, she turned off the light / ____ Probe: oven (cloze probability: 92.5%) / heating Preliminary results from 24 (out of planned 60) participants show a significant interaction between sentence ending and probe type, such that reaction times to predicted words increased in response to prediction violations, whereas reaction times to related words decreased in response to such violations. This interaction may indicate that predicted words are suppressed by a targeted inhibitory mechanism.

Are predictable words retrieved faster for production?

Solveig Castelli^{1 2 3}, Srdjan Popov¹, Roel Jonkers¹ & Audrey Bürki²

¹ University of Groningen, CLCG, Groningen, The Netherlands

² University of Potsdam, Potsdam, Germany

³ International Doctorate for Experimental Approaches to Language and Brain (IDEALAB)

In sentences, some words have a higher probability of being used given the context. For instance, “hunting” is a more probable verb than “sleeping” following “The fox is”. Studies have shown that listeners can make use of probabilistic knowledge in order to predict the word they are about to hear. The current study investigates whether speakers make use of probabilistic knowledge of word co-occurrences to facilitate word production. Eighty-one participants (72 of which were included in the analysis) participated in a picture-word interference paradigm experiment. They saw a written distractor noun followed by the picture of an action. and were asked to name the action using a verb. This verb either had a high or a low probability of co-occurring with the preceding noun. Verbs were named 51 ms faster in the high than in the low probability condition. According to the model, we can be 95% certain that the effect lies between -11.76 ms and -94.12 ms. This result suggests that speakers make use of probabilistic knowledge to facilitate production. Current models of word production do not involve mechanisms that can explain prediction in production and need to be extended to account for this finding.

Links between visual attention and language production in children

Sarah Dolscheid¹ & Martina Penke¹

¹Department of Rehabilitation and Special Education, University of Cologne

There are close links between the allocation of attention and the production of language. However, while such links have been well attested for adult speakers, the case is far less clear for children. To address this issue, we tested 4- to 5-year-old German-speaking children in a picture description task while their eye gaze was monitored via eye tracking. Children were asked to describe pictures with two characters in terms of a conjoined noun phrase (e.g., a pirate and a clown). We manipulated children's attention by means of a brief cue (a small circle) presented in the place where the left character was about to appear. We found that visual cueing was highly effective in orienting children's attention to the respective character. At the same time, children were also more likely to start their utterances with the cued character compared to a baseline without cueing. Children's first fixations to a character also correlated significantly with their propensity to first mention that character, demonstrating that children are more inclined to produce an utterance with an entity that is in their spotlight of attention. Taken together, our findings provide first evidence for close links between language production and visual attention in children.

Language choice and naming difficulty: Evidence from bilingual degraded picture naming

Nora Kennis¹, Martin J. Pickering¹ & Holly P. Branigan¹

¹Department of Psychology, University of Edinburgh, Edinburgh, UK

What determines bilinguals' language choices? Studies on voluntary language switching show bilinguals may select their non-dominant language for easily accessible words (e.g., more frequent or shorter words; Gollan & Ferreira, 2009) and their dominant language for harder-to-access words. Additionally, since even voluntarily switching between languages can incur a cognitive cost (e.g., de Bruin et al., 2018), bilinguals may switch between languages less when naming is more difficult. This study investigated how anticipated difficulty in naming may affect voluntary language choice and switching behaviour. 87 highly proficient Dutch-English bilinguals performed an online picture naming task (116 items) with free language choice. We used image degradation (Meyer et al., 2007) to manipulate the early, non-linguistic stages of word production to be easy (intact image) or difficult (degraded image). We hypothesised participants would use English (their non-dominant language) and switch languages less on degraded- versus intact-image trials. Using a logistic multi-level model, these predictions were confidently refuted: there was no effect of image degradation on either language choice or switch choice. Manipulation checks indicated significantly slower responses on degraded-image trials and a reverse-dominance effect on switching, as predicted. We argue that anticipated naming difficulty does not affect bilinguals' language or switching choice.

Effects of conceptual processing and social context on semantic interference

Caitlin Decuyper¹, Ruth Corps¹ & Antje Meyer^{1 2}

¹MPI for Psycholinguistics, Nijmegen, the Netherlands

²Radboud University, Nijmegen, the Netherlands

Picture-word interference (PWI) studies show that speakers are slower to name pictures with semantically related compared to unrelated distractors. A previous study (Kuhlen & Abdel Rahman, 2022, Cognition) suggests lexical interference disappears, and even turns into facilitation, in a joint task that enhances conceptual processing. In three experiments, we used a PWI task (SOA = -100ms) to disentangle effects of conceptual processing and social context. In E1, participants (N=20) named pictures and ignored related (N=70) or unrelated (N=70) written distractors. In E2 (N=22), PWI trials were mixed with association trials (N=280), which encouraged conceptual processing. E3 involved pairs of participants. Speaker A (N=28) did the same task as participants in E2, now with an addressee (B) who typed associations to A's response, thus giving A's utterance a communicative function. The interference effect found in E1 ($d=42\text{ms}$, $p < .001$) was reduced in E2 ($d=23\text{ms}$, $p > .05$) and E3 ($d=9\text{ms}$, $p > .05$). However, there was no interaction between the interference effect and the two social conditions (E2 vs. E3). These findings suggest that conceptual processing reduces interference, but the effects of social context need further investigation. We are currently replicating these experiments to test whether a longer SOA (-650ms) creates facilitation.

An Experimental Investigation of Unidirectionality in Semantic Extension

Anna Kapron-King¹, Simon Kirby¹ & Kenny Smith¹

¹ University of Edinburgh

Grammaticalization is the process by which a lexical item acquires a more functional role over time, such as when a noun comes to be used as a preposition. Grammaticalization is often described as unidirectional, that is, change from functional items to lexical items is far less common. Where does this unidirectionality come from? We present results from two artificial language experiments designed to shed light on whether people show a unidirectional bias when engaging in semantic extension. We focus on the phenomenon of using body part nouns as spatial prepositions. For the first experiment, participants are given the English meaning of an artificial word, then asked to rate how likely it is that that word can also be used to refer to another meaning. One of the meanings is a body part and the other is a preposition. Assuming individuals have a unidirectional bias, we expected lower ratings when the first meaning is a preposition compared to when it is a body part. For the second experiment, we pair participants up to have them perform semantic extension in a communication game. In both experiments, we found that participants did not show the expected unidirectional bias.

Bilingual sentence planning: linguistic and cognitive effects on Grammatical Planning Scope

Mikael André Albrecht¹, Allison Wetterlin¹ & Linda Wheeldon¹

¹University of Agder

Fluent spoken sentences are planned incrementally. The amount planned prior to speech onset depends on both linguistic and cognitive factors. We investigate the impact of such factors on L2 English and L1 Norwegian sentence planning in a sentence-based language switching paradigm. The effects of switching and morphosyntactic overlap on planning scope were investigated. 64 participants described pairs of moving pictures eliciting either complex-initial sentences (e.g., an A and a B go up) or simple-initial sentences (e.g., an A goes above a B). The sentences comprised either definite NPs (dissimilar structure in both languages) or indefinite NPs (similar structure in Norwegian and English). Onset latencies and eye fixations were recorded. Both data sets show smaller effects of phrase structure on switch trials compared to non-switch trials, consistent with a reduced planning scope when cognitive load increases. In contrast, morphosyntax affected production independently of switching. Overall, the results show that language switching affects planning scope and that the effects of phrase structure manifests in the early stages of pre-verbal planning. Language switching affects gaze patterns later in the production process. The results are consistent with a phrasal planning scope modulated by cognitive control demands.

**Testing an information-theoretic approach to the usage of gapping in
German**

Bozhidara Hristova¹, Robin Lemke¹, Lisa Schäfer¹, Heiner Drenhaus¹ & Ingo Reich¹

¹ Saarland University

With two preregistered experiments, we test the information-theoretic hypothesis that gapping is more strongly preferred and easier to process, the more predictable the potentially omitted verb is. We focus on the omission of the inflected verb in the second conjuncts (C2) of sentences like (1) in German and modulate the verb's predictability (its surprisal) by manipulating the preceding subject noun phrase. (1) Max composed a symphony, a. and the musician ⟨composed⟩ a ballade. (low-surprisal verb) b. and the baker ⟨composed⟩ a ballade. (high-surprisal verb) With a cloze task, we first investigate our assumption that the surprisal of the C2 verb can be manipulated through the typicality of its subject. We predict that participants produce the same verb as the verb in the first conjunct more often when the C2 subject is prototypical with regard to the verb (1a). In a follow-up acceptability rating study, we test if gapping is rated as relatively more acceptable (compared to the nonelliptical form) when the C2 verb has low surprisal. If the predictions from these two experiments are borne out, we will proceed with a self-paced reading study exploring whether the more acceptable instances of gapping are easier to process.

Preregistrations:

https://osf.io/kgw6c/?view_only=8d6e17e4d7364831aded06922c0af09f

https://osf.io/kqwbt/?view_only=116cc3a1b38f4dd8aaaae0a2301c82be

Is Valence Sound Symbolism Driven by Articulatory Movements?

Ralf Rummer¹ & Anita Körner¹

¹University of Kassel, Germany

Vowels are associated with valence. Specifically, pseudo-words containing /i/ (vs. /o/ and /u/) are more frequently judged to denote positive (vs. negative) objects and people. In addition, novel names invented for positive (vs. negative) objects and people contain more /i/s and fewer /o/s and /u/s. In Experiment 1, German and Japanese native speakers saw faces differing in valence by showing a positive or negative emotional expression, and were asked to invent pseudonyms for each face. We found that names for positive (vs. negative) faces contained more /i/s. In addition, participants used significantly more /o/s and /u/s for negative (vs. positive) faces. Importantly, these effects did not differ as a function of the participants' native language. In Experiment 2, we investigated the mechanisms behind this effect by additionally examining the vowel /y/ (as in German über), which pits an auditory (frequency-based) against an articulatory explanation of valence sound symbolism (/y/ is articulated like an /o/ but its frequency is like /i/). Here, /y/ was associated rather with negative valence (similar to /o/), which fits with a motor mechanism of valence sound symbolism. Thus, valence sound symbolism might be driven by overlapping muscle tension for emotional expressions and vowel articulation.

The shape of inhibitory control in language context: A study based on Chinese-English bilingual language switching

Yun-Wei Lee ¹ & Aina Casaponsa ¹

¹ Lancaster University

How do bilinguals select the target language through parallel activation of L1 and L2? This can be achieved by inhibiting the non-target language (Green, 1998). Bilinguals need to overcome inhibition to switch to an inhibited language, which elicits switch costs. L1 is the dominant language, yielding its higher activation than L2. Typical 50% L1–50% L2 switching experiment shows that selecting L2 requires stronger L1 inhibition followed by larger L1 switch costs when L1 is retrieved again. In everyday life, L1 and L2 activation varies in language contexts, which larger switch costs should occur to the most activated language (e.g., L1 context – larger L1 switch costs). In this study, Chinese-English bilinguals named pictures in two different contexts consisted of 75% L1 (L1 context) and 75% L2 (L2 context). We expected to observe larger L1 switch costs in L1 context and larger L2 switch costs in L2 context. As expected, L1 context showed larger L1 switch costs because producing L2 required stronger L1 inhibition. Interestingly, L2 context showed equivalent L1 and L2 switch costs because switching between highly activated L2 and dominant L1 caused similar L1/L2 inhibition. Extending from Green’s theory, we suggest that language context modulates the magnitude of inhibition.

The role of the complexity of grammar in a sentence repetition task with Italian preschoolers

Paolo Lorusso¹ & Andrea Marini¹

¹ Università degli studi di Udine

In this study we performed a Sentence Repetition Task with Italian preschoolers to test whether the assignment would be affected by the different degree of grammatical complexity. The input sentences showed different level of complexity: 1) verb classes (copulas, transitives, intransitives), 2) number of arguments, 3) verbal inflection, 4) negation, 5) clausal embeddings, 6) ellipsis, 7) pronominal gaps, 8) modal and aspectual auxiliaries. 295 Italian speaking children (158 females) aged between 4;00 and 5;11. Method and materials: Sentence repetition tasks (SRTs) of 20 sentences, each sentence with a different degree of grammatical complexity. We found no age effect on the results. In general, the complexity of sentences (such as verb type, relative pronouns, negation, number of arguments) did not influence the overall results (15% average of mistakes). However, in two conditions children produced 50% of mistakes: sentences involving nonfinite clausal embedding (gerunds in progressive periphrases) and sentences with verbal ellipsis. The SRT results suggest that the grammatical complexity determining the mistakes in production is related to the computation of grammatical empty categories (absence of inflection and elided verbs) but not to the complexity related to the syntactic structure.

On the interaction between implicit statistical learning and the alternation advantage: Evidence from manual and oculomotor serial reaction time tasks

Marta Tagliani¹, Arianna Compostella¹, Maria Vender¹ & Denis Delfitto¹

¹University of Verona

We present the results of two Artificial Grammar Learning (AGL) studies examining the interaction between implicit statistical learning (ISL) and the cognitive bias known as alternation advantage (AA) in Serial Reaction Time (SRT) tasks, to disentangle perceptual from motor aspects of learning, and to investigate the cognitive sources of AA. We administered to typically developed adults a manual (Study1) and an oculomotor (Study2) two-choice SRT task with visual stimuli following the regularities of two artificial grammars (Lindenmayer systems: Fibonacci, Skip), sharing the same transitional regularities, but displaying different distributional properties. Having found evidence for both the presence of ISL and AA (Study1), we explored participants' predictive behavior by measuring saccadic eye movements preceding stimulus onset. Anticipatory saccades reflected ISL, confirming the results from manual responses, and provided evidence for the perceptual nature of the observed learning effects, i.e., participants detected regularities in the strings forming Stimulus-to-Stimulus associations. Crucially, for the first time in literature, we found that AA interacts with the computation of conditional statistical properties in AGL studies with SRT tasks. Moreover, we found evidence that visuospatial attention shifts (preceding oculomotor programming) intervene in the occurrence of AA, which is driven by the stimuli's spatial location.

Children's selective interests and their association with caregiver-child interactions and word learning

Rajalakshmi Madhavan^{1 2} & Nivedita Mani^{1 2}

¹ Psychology of Language Group, University of Göttingen, Göttingen, Germany

² Leibniz ScienceCampus Primate Cognition, Göttingen, Germany

This study investigates the extent to which parental input and children's selective interests modulates the quality of caregiver-child interaction (QOI) when engaging in activities, and their influence on children's subsequent learning. Specifically, we examine whether: (1) parents can accurately pinpoint their children's interests, (2) QOI during shared book-reading is modulated by children's interest in the discussion content, and (3) there is a combined effect of QOI and children's interests on children's learning. Seventy caregiver-child dyads completed: (a) Shared book-reading task where parents read two books to their child – one previously determined to be low- and one high-interest to the child (with one novel word-object mapping introduced in each book), (b) preferential-looking task to assess children's interest in our book-categories and (c) eye-tracking task to test later recognition of newly-introduced word-object mappings. Our analyses show that (1) only 12% of parents' indications of their children's high-interest category matched the category that children looked longest to; however, (2) QOI is significantly associated with children's interest in the book topic, and (3) only parents' perception of children's interest successfully predicts later novel word recognition. Taken together, the study demonstrates how caregiver-child interactions and subsequent word learning are modulated by children's active interests.

Statistical learning of a natural language. The role of transitional probabilities in word segmentation at first exposure

Marie-Christin Flohr¹, Katie Von Holzen² & Sarah Schimke¹

¹ Ludwig-Maximilians-Universität München

² Technische Universität Braunschweig

The current study explores statistical learning (SL), more precisely, the usage of transitional probabilities between syllables, in second language learners' word segmentation at first exposure. While we know that SL is an important mechanism in first language development, less is known about SL in L2 acquisition. Moreover, most studies rely on artificial input, which limits ecological validity. Thirty Spanish adults listened to German input in a familiarization phase (FP). In a subsequent forced choice task, they heard bisyllabic target words and indicated whether they heard the respective word in the FP (yes-indication) or not. Critical words (CW) appeared in the FP, absent words (AW) were not presented in the FP and part words (PW) consisted of syllables that were present in FP, while the word itself was not presented during the FP. A GLMM revealed a significant influence of target condition (CW, PW, or AW): CW elicited more yes-indications than AW ($z = 6.514$, $p < .0001$) and PW ($z = 4.033$, $p = .0006$). We furthermore calculated medium response sensitivity (d' prime) for CW vs. AW ($d'=1.5704$) and CW vs. PW ($d'=0.3324$). These results suggest that learners exploit transitional probabilities to segment words of a foreign language.

Non-interactive Bilingualism: a different path for language acquisition?

Charlotte Dumont ¹, Emma Peri ², Arnaud Destrebecqz ¹ & Mikhail Kissine ¹

¹ Université libre de Bruxelles

² University of Amsterdam

A growing number of caregivers and practitioners describe autistic children who spontaneously acquire English exclusively through passive exposure to screens. Such Non-interactive Bilingualism (NIB) has been documented in only a few case studies but suffices to question the determining role of social interaction for language acquisition. Our hypothesis is that autistic children with an NIB profile access language by relying more on statistical learning than on the socio-interactive aspect of language. The goal of this study is to explore statistical learning as a key mechanism of language acquisition in autistic children. Preliminary results of 4 subgroups of 5 children aged between 5 and 8, will be presented: non autistic children group, autistic NIB children, verbal autistic children and minimally verbal autistic children. Their language levels in French and English, non-verbal cognitive abilities and response to joint attention are assessed through standardised tests. Linguistic and visual statistical learning are assessed with game-based tasks. We expect a continuum in statistical learning with NIB profiles being the most sensitive to statistical properties and minimally verbal children being the less sensitive to statistical properties. We expect little relation between response to joint attention and language performance in autistic children with an NIB profile.

**Frequency and frequency informed learning effects in a large single-person
Estonian word naming experiment**

Kaidi Lõo¹, Maria Heitmeier², Arvi Tavast³ & Harald Baayen²

¹ University of Tartu, Estonia

² University of Tübingen, Germany

³ Institute of Estonian Language, Tallinn, Estonia

⁴ University of Tübingen, Germany

The frequency effect is one of the benchmark effects in psycholinguistic research (e.g., Kliegel et al., 2004; Brysbaert et al., 2011). However, the cognitive mechanism behind this effect is not necessarily clear (Baayen, 2010). Within a discriminative learning framework (Chuang and Baayen, 2019), high-frequency words are learned more precisely and thus predicted to be processed faster. The current study investigated the frequency of occurrence and discriminative frequency-informed learning effects using a large single-person Estonian word naming experiment. A 45-year-old male native speaker of Estonian read aloud 30 000 isolated Estonian words while his eye movements were recorded. More frequent words were read with shorter production onset latency and with shorter acoustic word duration, but surprisingly with longer total silent reading time than less frequent words. Discriminative frequency-informed learning measures provided a better model fit in our regression models than a simple word frequency count from a large corpus. When the meaning of a word is well supported by a discriminatively learned semantic network, the speaker starts producing it faster. These results support other studies showing that discriminative learning may provide more precise predictions of lexical processing than simple count-based lexical-statistical measures, such as frequency of occurrence (Chuang and Baayen, 2019).

Association of lexical access and sentence comprehension with non-linguistic cognitive functions in older people with mild cognitive impairment

Irina Lobanova¹, Alina Zabolotskaya^{1,2}, Viktor Savilov³, Timur Syunyakov³, Marat Kurmyshev³, Elena Kurmysheva³, Natalia Osipova³, Olga Karpenko³, Alisa Andryushchenko³ & Svetlana Malyutina¹

¹ Higher School of Economics, Moscow, Russia

² Free University of Berlin, Berlin, Germany

³ Mental Health Clinic No. 1 named after N.A. Alexeev, Moscow, Russia

Mild cognitive impairment (MCI) is a condition where the decline of cognitive functions, especially memory, is greater than in normal aging although smaller than in dementia, and it affects many older adults. Linguistic skills such as discourse production, speech comprehension and lexical access, may also be affected. Investigating specific patterns of decline across cognitive functions is important in order to develop effective tests that can detect MCI in early stages and predict dementia. The goal of our study was to determine the relation between language skills (lexical access and sentence comprehension) and other cognitive functions, measured by the Mini Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA), in older people with MCI. The sample included 176 older adults (age range: 55-93) attending a memory clinic. Both lexical access and sentence comprehension were significantly associated with the MoCA total score but not the MMSE total score. The findings have theoretical implications for how memory and executive control deficits, as measured differentially by MoCA and MMSE, relate to language performance in MCI. The clinical implication is that MoCA can be considered as an indirect indicator of language deficits although specialized language screening tests for MCI should be developed.

The role of orthography in explicit and implicit spoken word learning

Mina Jevtovic¹, Efthymia Kapnoula^{1,2} & Clara D. Martin^{1,2}

¹Basque Center on Cognition, Brain and Language (BCBL)

²Ikerbasque - Basque Foundation for Science

When learning novel spoken words, literate children and adults generate orthographic expectations before seeing novel words' actual spellings (Wegener et al., 2018). Importantly, they do so even for spoken words with multiple possible spellings (Jevtović et al., 2022). The present study investigates whether orthographic expectations are generated automatically during spoken word learning, or only when novel words are learned through an explicit learning task. Two groups of Spanish-speaking adults first learned spoken words with one or two possible spellings. However, while the group of explicit learners learned words through explicit instruction, implicit learners acquired those same words in an implicit word learning task. All participants were then presented with words' spellings in a self-paced reading task. Explicit learners were faster to read aurally acquired words with one as compared to those with two possible spellings, suggesting that they had generated orthographic expectations. The same difference was not observed in implicit learners. These results show that orthographic expectations are generated only during explicit spoken word learning. We thus conclude that generating orthographic expectations during spoken word learning is not an automatic process. This raises a possibility that generating orthographic expectations may represent a strategy participants employ to facilitate the learning process.

Morpho-phonological complexity and lexical access: An ERP study of English adjectives

Charles Redmon^{1 4}, Anna Gupta², Carsten Eulitz², Frans Plank^{2 3} & Aditi Lahiri^{1 3}

¹ University of Oxford

² University of Konstanz

³ Somerville College

⁴ University of Essex

Previous work has shown the depth of morphological derivation in cases with no overt phonological exponent such as noun-verb conversion (e.g., 1-step working [[work]V.ing]V vs. 2-step booking [[[book]N]V.ing]V) impacts word recognition, with items of greater depth exhibiting less priming and N400 modulation in EEG, and differential activation strength in the LIFG in fMRI. However, overt affixes may or may not add syllables: -ly=[li]=1 σ in friendly vs. -ed=[d]=C=Ø σ in marked [ma:kt], thus affecting phonological complexity. In a cross-modal priming ERP study we extended our work along different dimensions of phonological and morphological complexity using the adjectival prefix un- to manipulate depth from different suffix derivations—no suffix, 1 σ -suffix (ly) or a 1C suffix (-ed=[d]/[t]). Using 1 σ or 2 σ stems, four conditions were chosen: un-well~un-happy (1-step disyllabic/trisyllabic) vs. un-marked~un-friend-ly (2-step disyllabic/trisyllabic). Complex words were presented as auditory primes with bases (well, happy, mark, friend) as visual targets. ERPs to visual targets were computed and compared to matched control pairs. All conditions showed equivalent priming as reflected in N400 reduction (1.2–1.8 μ V), indicating that neither suffix/stem length nor derivational depth significantly impedes lexical access. This result provides evidence for decomposition as base activation as reflected in priming was independent of morpho-phonological complexity.

**Exploring the mental lexicon of bilingual children when processing
codeswitched determiner phrases**

Raquel Fernández Fuertes¹, Tamara Gómez Carrero¹ & Juana M. Liceras^{2,3}

¹ University of Valladolid (Spain)

² University of Ottawa (Canada)

³ University Nebrija (Spain)

We focus on language activation and language inhibition in the bilingual child's processing of codeswitching between a determiner (DET) and a noun (N) (the book / el-la book). Previous work has mainly focused on adult bilinguals with few studies analyzing data from bilingual children. We tested two groups (=87) of L1 Spanish-L2 English children in Spain to investigate how the mental representation of the formal features involved is responsible for the sensitivity to grammatical gender which in turn has impact on how bilinguals' language activation and inhibition processes are at play and shape processing. We target the directionality of the switch (English-DET/Spanish-N -the casa- versus Spanish-DET/English-N -la house-) and the type of implicit gender agreement mechanism in the case of Spanish-DET/English-N switches (la house versus el house) using offline acceptability judgment data and eyetracking during reading data. Results suggest lower processing costs of English-DET switches (the book) and higher ones of non-congruent Spanish DET switches (laFem. bookMasc. in Spanish). We interpret the preference for classifying the English non-gendered nouns along the lines of the Spanish gendered nouns as evidence for the hypothesis that defends that the two nouns depicting the same concept are associated in the mind of the bilingual.

Lexical relations in Spanish-speaking younger adults: an approach to syntactic routes to the mental lexicon

Marco A. Flores-Coronado ^{2 1}, Elsa M. Vargas-García ^{4 1}, Aline Minto-García ^{3 1} & Natalia Arias-Trejo ¹

¹ Universidad Nacional Autónoma de México

² Basque Center on Cognition, Brain and Language

³ Benemérita Universidad Autónoma de Puebla

⁴ Universidad Autónoma de Querétaro

Semantic memory processes have been analyzed through the study of relations between words. The theoretical model that represents lexical relations as word networks (Cancho & Solé, 2001) assumes that words have a semantic organization, but also grammatical one (Dubossarsky et al., 2017; Lupyan & Lewis, 2019). Several theoretical computational models show that lexical and morphotactic information as a whole allow the emergence of meaning (Martin & Baggio, 2020). The aim of our study is to examine lexical relations in Spanish-speaking younger adults, using a free word association task, in order to observe the mental lexicon's syntactic routes. Participants were 25 undergraduate younger adults native Spanish speakers. Stimuli were 119 words (nouns, verbs, adjectives, and adverbs) of high-frequency and early acquisition. Responses were coded according to their grammatical category. Lexical relations were classified as paradigmatic when two words belong to the same grammatical class, and syntagmatic when they belong to different grammatical classes. Results show a greater proportion of paradigmatic responses which registered faster reaction times, especially for noun stimuli. Conversely, verb stimuli lead to a greater proportion of syntagmatic responses and slower reaction times. These results suggest that grammatical categories seem to constrain specific lexical and syntactic association routes.

Managing lexical co-activation in closely related varieties of Norwegian

Maud Westendorp¹, Evelyn Bosma² & Göran Söderlund³

¹ UiT The Arctic University of Norway

² Fryske Akademy

³ Western Norway University of Applied Sciences

Cognitive control is crucial in managing lexical co-activation in bilinguals (Linck et al. 2008; Jiang et al. 2022; Vuong and Martin 2014). In this study we explore the lexical organisation of bilingual users of the two written standards of Norwegian (majority variety Bokmål and minority variety Nynorsk), and the possible cognitive effects of this multilingual literacy. 145 Nynorsk-dominant pupils (age 13–15) participated in an experiment which alternated language decision trials (LD; Bokmål or Nynorsk) and Flanker trials in a 'conflict-adaptation' paradigm based on previous work by Adler et al. (2020) and Bosma & Pablos (2020). The LD-task used identical and regular cognates, and non-cognates. This paradigm taps whether switching between two closely related varieties engages cognitive control measurable on the subsequent Flanker trial. We find a non-gradual cognate facilitation effect in the LD-task ($p = .006$), as well as a trend showing a smaller Flanker effect (i.e., difference between congruent and incongruent trials) after (identical) cognates than after non-cognates. Possibly, this effect could be significant with a larger sample size. It could imply that, as hypothesised, lexical co-activation from cognates uses cognitive control also in closely related varieties. More fieldwork is planned for May 2023 with Bokmål-dominant pupils.

The role of letter position in orthographic processing: evidence from Russian

Natalia Slioussar¹

¹ HSE Moscow

Whether the position of the letter in a word matters for orthographic processing is an important question for psycholinguistics. Previous results are mostly from morphologically simple words, so we compared roots, prefixes and suffixes on the material of Russian verbs. We conducted two lexical decision experiments with priming. The materials were the same. In Experiment 1 (N=42), primes were shown for 60 ms to capture early processing stages, in Experiment 2 (N=41), for 150 ms to study later stages. Targets were prefixed (zatolkat') and suffixed (tolknut') verbs. They were presented in three conditions: (1) after a prime with a letter substitution in the affix (zEtolkat' or tolknOt'); (2) after a prime with a letter substitution in the stem (zatllkat' or tllknut'); (3) after an unrelated prime (control condition). In Experiment 1, there were only tendencies. In Experiment 2, letter substitutions in the root were more noticeable than in the affix, although previous studies of monomorphemic words showed that substitutions in the middle are less noticeable. Secondly, letter substitutions were less noticeable in suffixed words than in prefixed words, and suffixed words were easier to recognize — potentially, because suffixed words start with the root morpheme that is crucial for recognition.

Use of L1 phonotactics in initial foreign-language speech segmentation

Katie Von Holzen¹, Sophia Wulfert¹ & Holger Hopp¹

¹ English and American Studies, TU Braunschweig

Phonotactics provides sublexical cues to speech segmentation, but is language-specific (Weber & Cutler, 2006). We investigate the degree to which L1 phonotactics is applied to foreign-language English segmentation among 96 German 1st and 2nd elementary-school students before receiving instruction in English. In a probe recognition task, students listened to a sentence followed by an isolated probe word. Target pseudowords were embedded in English sentences, with the context (Boundary Type) providing a clear (e.g., lv; dal_vouchen) or ambiguous (kv; dack_vouchen) L1-German phonotactic word boundary cue. Probe words were either short (vouchen), or long (kvouchen/lvouchen) pseudoword candidates (Length). If children use L1 phonotactic cues, they should easily detect pseudowords in clear boundary contexts. An analysis of the 45 1st graders tested so far revealed that students detected target words above chance level (d' prime: $t(44) = 7.77$; $p < .001$, Figure 1) . Target accuracy was greatest for short target words with clear boundary cues (EMM = 0.40; Figure 2). This pattern demonstrates a tendency for young children to apply L1 phonotactic cues to segment foreign-language speech. In the full sample, we will also examine the role of individual differences in L1 knowledge and phonological awareness.

Regressive transfer from L2 to L1 in speech production after a study abroad program

Peng Li¹, James Emil Flege², Clara Martin³⁴ & Natalia Kartushina¹

¹University of Oslo

²University of Alabama at Birmingham

³Basque Center on Cognition, Brain

⁴Ikerbasque, BasqueFoundation for Science

This study observed whether study abroad (SA) could affect the native language (L1) production (i.e., regressive transfer), as this provides evidence of crosslinguistic influence for the second language (L2) speech learning models. Seven Norwegian-speaking learners of Chinese read three Norwegian short stories before (T1) and after studying in Taiwan (T2). The target sounds were Norwegian /y/ and /ʉ/ because both vowels can be mapped to Chinese /y/, which is acoustically in the middle of them. We hypothesized that the learners would show a merger at T2 due to regressive transfer. We assessed the degree of merger by calculating the Pillai score between vowels and between tests, yielding four sets of scores: /y/ vs. /ʉ/ at T1, /y/ vs. /ʉ/ at T2, T1 vs. T2 of /y/, and T1 vs. T2 of /ʉ/. The results showed that (a) when comparing T1 and T2, both vowels showed a similar degree of merger, but (b) when comparing the two vowels at each test, T2 showed a significantly lower Pillai score than T1. The results suggest that the extensive L2 input during SA caused a tendency of merger between the learners' L1 vowel categories, which is clear evidence of regressive transfer.

[PS-2.75]

Language learning under negligible exposure, no instruction, and L1-transfer. An ongoing SPR longitudinal study on the acquisition of obligatory control in L2 Italian

Stefano Rastelli ¹, Pietro Mingardi ¹, Francesca Pagliara ¹, Beatrice Iaria ¹, Valerio Damiani ¹, Giada Antonicelli ² & Paolo Canal ³

¹ Università di Pavia

² Basque Center on Cognition, Brain and Language

³ IUSS - Pavia

It is debated whether the probabilistic features of the input alone can explain the L2 acquisition of core syntax (e.g. object relatives). Obligatory control in the Italian gerund (OCG) offers a testing ground. OCG frequency in Italian input is negligible (~2,5% of verb lexemes), OCG is not taught and is differently principled or absent in many learners' L1s. Using a longitudinal similarity-judgment SPR task, we tested 42 instructed adult L2 Italian learners (having different L1s) and native controls six months apart. Participants read target sentences featuring the gerund followed by either a finite-verb matching (where PRO was correctly coindexed with the main clause subject) or a mismatching probe. Participants evaluated if the probe matched the target. The ROI coincided with the disambiguating word. We tested if the probe's (log-transformed) reading times were affected by trial, learners' proficiency, gerund frequency and position, and probe condition, using an LMM model. We tested accuracy and (log-transformed) RTs in the evaluation task using a GLMM with a binomial distribution and an LMM, respectively. We predict higher accuracy, faster decisions, and more efficient ROI readings at the second trial, despite scarce to nihil exposure, no instruction, and L1 transfer effects. Results are expected by June

Surprisal and Agent Preference jointly predict ERPs in sentence processing

Eva Huber^{1,2}, Sebastian Sauppe^{1,2}, Arrate Isasi-Isasmendi^{1,2}, Ina Bornkessel-Schlesewsky³, Paola Merlo⁴ & Balthasar Bickel^{1,2}

¹ Department of Comparative Language Science, University of Zurich

² Center for Interdisciplinary Study of Language Evolution, University of Zurich

³ Cognitive Neuroscience Laboratory, Australian Research Centre for Interactive and Virtual Environments, University of South Australia

⁴ Department of Linguistics, University of Geneva

Language models based on artificial neural networks increasingly capture key aspects of how humans process sentences. Most notably, model-based surprisal predicts event-related potentials such as N400 amplitudes during parsing. Here, we test the extent to which surprisal can predict N400 amplitudes observed during the comprehension of verb-final sentences in German, Basque, and Hindi. We compare surprisal to the Agent Preference, a principle by which humans transiently interpret initial role-ambiguous NPs as agents, leading to reanalysis when this interpretation fails. We show that, in each language, N400 ERPs elicited by encountering the verb are best predicted when model-based surprisal is complemented by the Agent Preference. Our findings demonstrate the need for this principle independently of usage frequencies and structural differences between languages. The principle has unequal force, however. Compared to surprisal, its effect is weakest in German, stronger in Hindi, and even stronger in Basque. This gradient is correlated to the degree that grammars allow unmarked NPs to be patients, a structural feature that boosts reanalysis effects. We conclude that language models gain more neurobiological plausibility by incorporating an Agent Preference. Conversely, theories of human processing profit from incorporating surprisal in addition to structural and semantic principles like the Agent Preference.

Readers immediately understand speakers' source claim: Neurological evidence for Korean evidential markers

Hongoak Yun ¹, Yunju Nam ², Soojeong Kim ² & Soonja Choi ³

¹ Jeju National University

² Hanyang University

³ San Diego State University

The expression of evidentiality, or the source of information, varies typologically among languages. Languages like Korean or Turkish prefer the use of grammatical markers, while languages like German or English typically deliver evidential information in lexical forms. Choi et al. (2022) demonstrated these typological differences between Korean and German speakers in the production of evidential information. However, little has been known about the comprehension process, testing how listeners (or readers) can access speakers' delivery of the evidential information. In this study, we aimed to observe neurological evidence of Korean readers' immediate processing of evidential markers during sentence comprehension. We manipulated two factors: (1) four types of sentence-ending (SE) markers (two evidential markers [witnessing, hearsay] and two nonevidential markers [plausible, implausible]), and (2) two types of contextual congruency (match vs. mismatch) between the 4 SE markers and the source information (witness, hearsay). Our neurological responses revealed the N400 when SE markers and the source information were mismatched and the N400+P600 when nonevidential implausible markers were used. Our results showed that Korean readers were sensitive and accurate in the processing of evidential grammatical markers. We will further discuss the function of evidential SE markers in Korean, with a special focus on listeners' perspectives.

Cognitive and neural mechanisms of voluntary versus forced language switching in Wu-Mandarin Bilinguals: an fMRI study

Xinyu Zhao ^{1,2}, Qihui Xu ³, Shengwei Liu ^{1,2}, Qianying Zhang ⁴ & Libo Geng ^{1,2}

¹ School of Linguistic Sciences and Arts, Jiangsu Normal University, Xuzhou, China

² Collaborative Innovation Center for Language Ability, Jiangsu Normal University, Xuzhou, China

³ Basque Center on Cognition Brain and Language, Donostia-San Sebastián, Spain

⁴ Shaohua Street Primary School, Xuzhou, China

Voluntary switching in ecologically valid contexts has received limited attention, with most studies showing no cognitive costs (Blanco-Elorrieta & Pylkkanen, 2017; Liu et al., 2020; Zhu et al., 2022). However, it is unclear if this holds true for different bilingual populations. Our study examines cognitive control in voluntary and forced language switching. We compared picture-naming tasks in voluntary and forced contexts with Wu-Mandarin bilinguals, a balanced bilingual population in Shanghai who frequently code switch between the two typologically similar languages. Behavioral analysis revealed no significant differences in switching costs between voluntary and forced language switching. In fMRI data, the supramarginal gyrus was significantly activated in voluntary switching, while several regions, including the bilateral inferior frontal gyrus, left superior frontal gyrus, left cingulate gyrus, and right precentral gyrus, were activated in forced switching. These findings challenge the notion of no cognitive costs in voluntary switching but still indicate notable neural differences between voluntary and forced switching. Moreover, we observed a broader activation of the frontal-parietal network in voluntary context, suggesting involvement of cognitive processes like endogenous selection preparation and dynamic selection updating in voluntary language selection. These findings highlight bilingual diversity in comprehending the neurocognitive mechanisms of language control.

How Languages Shape Your Brain? Cognitive Control Brain Networks in Bilinguals and Monolinguals

Lorena Molina-Arcia ¹, Ángel E. Tovar ¹, Eduardo A. Garza-Villarreal ² & Octavio García ¹

¹ Facultad de Psicología, Universidad Nacional Autónoma de México

² Instituto de Neurobiología, Universidad Nacional Autónoma de México

Cognitive control has been one of the most studied abilities in bilingualism. However, little is known about the differences in the characteristics of brain networks involved in the development of cognitive control between bilinguals and monolinguals. Using graph theory and network science this study aimed to analyze and compare the characteristics of brain networks related to cognitive control between monolinguals and bilinguals. We analyzed the characteristics of three brain networks: the Default Mode Network (DMN), the Salience Network, and the Frontoparietal Network. We used the fMRI dataset of Gold et al. (2018), which includes images of early bilinguals (n = 18), late bilinguals (n = 25), and monolinguals (n = 21). We found differences in the average degree centrality of the DMN, the bilinguals showed a lower degree level than the monolinguals, and monolinguals showed a higher number of connections between areas in the DMN. These results suggest that bilingual brains show changes in the functional connectivity of the DMN, possibly as a result of more experience with cognitive control functions. The efficiency of this network increases by having a better performance and a lower quantity of connections in the DMN.

Do surprisal and entropy affect delta-band signatures of syntactic processing?

Sophie Slaats¹, Antje S. Meyer^{1 2} & Andrea E. Martin^{1 2}

¹ Max Planck Institute for Psycholinguistics, Nijmegen, the Netherlands

² Donders Institute for Brain, Cognition and Behavior, Radboud University, Nijmegen, the Netherlands

To understand language, we need to recognize words and combine these into sentences. How do we do it? Lexical probability information, such as surprisal and entropy, is a good predictor for behavioral and neuroimaging signatures of comprehension, indicating that probabilistic information plays a role in this process (e.g., Aurnhammer & Frank, 2019; Weissbart et al., 2020). At the same time, syntactic structure building is crucial for comprehension (e.g., Coopmans et al., 2022). In this work, we use a naturalistic listening paradigm and magnetoencephalography to explore the hypothesis that the computation of syntactic structure is affected by lexical probability (Martin, 2016; 2020). We used temporal response functions to estimate responses to syntactic annotations of the stimuli, and compared these between words with high and low values of surprisal or entropy. Preliminary results are mixed. Delta-band neural correlates of the computation of syntactic structure appear later for high-surprisal words than for low-surprisal words. However, a model that includes this distinction does not provide better model fit than a model that does not include it, suggesting that probabilistic and syntactic information are unrelated to each other in their neural encoding.

Brain potentials reveal reduced emotional sensitivity in a second language during language production.

Rafał Jończyk^{1,2}, Marcin Naranowicz¹, Tarik Bel-Bahar³, Paweł Korpala¹, Katarzyna Jankowiak¹ & Katarzyna Bromberek-Dyzman¹

¹ Faculty of English, Adam Mickiewicz University, Poznań, Poland

² Cognitive Neuroscience Center, Adam Mickiewicz University, Poznań, Poland

³ Department of Psychiatry, Icahn School of Medicine at Mount Sinai, New York, USA

Accumulating electrophysiological evidence points to reduced sensitivity to negative language content when bilinguals operate in their second language. We recently extended this effect to language production in two EEG experiments: N400 decreased in amplitude for negative word comprehension in L2; Late Positivity Potential (LPP), by contrast, increased in amplitude when participants prepared for production of negative L1 words (oral translation from L2-to-L1). Here, we investigate this effect with spoken rather than written words. Polish-English bilinguals listened to negative and neutral words in Polish and English. Spoken words were preceded by neutral or sad emojis informing about the emotional nature of the upcoming word. Emojis were white or black in colour, indicating whether participants should repeat aloud or translate the word. Language was blocked; block order and cue color were counterbalanced. Speech articulation artefacts were removed using the Residue Iteration Decomposition. Data collection is ongoing. Preliminary results from 19 participants show reduced N400 amplitudes for negative as compared to neutral word comprehension in L2, irrespective of the task, and larger LPP when participants prepared for negative word production in L1. These results provide novel insights into emotional language production in bilinguals in response to spoken words, mimicking naturally occurring communication.

Grammar interaction in multilingual processing – an eye-tracking study of grammatical case and verbal aspect in heritage Russian

Natalia Mitrofanova¹, Serge Minor¹ & Alexandra Bogoyavlenskaya¹

¹UiT The Arctic University of Norway

We investigate the effects of cross-linguistic influence in grammatical processing by comparing across bilingual groups, carefully matched by background and lexical proficiency measures. We employ Visual World eye-tracking and focus on the acquisition of grammatical case and aspect in Russian-speaking children. Both case and aspect have been found to be vulnerable in heritage Russian (Polinsky 2008) and acquired early in monolinguals (Ceitlin 2000). The heritage speakers were sampled from two populations: Spanish-Russian (n= 45) and German-Russian bilinguals (n=45) closely matched by age, overall exposure (Q-Bex) and lexical proficiency in the heritage language (MAIN narratives). The choice of the populations was determined by structural similarity between languages: Russian and German both mark grammatical case (nominative vs accusative) in the noun phrase, while Spanish doesn't employ overt case marking. On the other hand, Spanish and Russian are similar in their use of verbal aspect (perfective vs imperfective) to distinguish between completed vs ongoing events in the past, while German doesn't grammatically mark verbal aspect. The results indicate that having a structurally similar grammatical contrast in the societal language can facilitate acquisition of this property in the heritage language: Spanish-Russian children outperformed the German-Russian children in comprehending grammatical aspect, but not grammatical case.

Illusions of Garden-path Recovery are Temporary

Yang Fan¹ & E. Matthew Husband¹

¹University of Oxford

Previous studies find that garden-path reanalysis relies on noisy cue-based memory retrieval mechanisms. In NP/Z garden-paths, where missing main clause subjects trigger reanalysis, irrelevant NPs that partially match disambiguating verb retrieval cues are found to reduce garden-path effects and lead to illusions of garden-path recovery. This suggests that the parser sometimes retrieves irrelevant constituents during reanalysis, questioning whether the parser ever fully recovers structurally coherent global interpretations when under recovery illusions. To address this question, we conducted a 2x2 eye-tracking experiment (N=24, Item=40), manipulating NP/Z structure (garden-path, control) and irrelevant NP number to match/mismatch the disambiguating verb. A plural reflexive following disambiguation probed which NP the parser had reanalyzed as the main clause subject, e.g. “After the caregiver(s) washed(,) the girl with frizzy hair were sleepy and laid themselves on the bed.” We expected facilitation on ‘themselves’ in the garden-path + match condition if an illusion of recovery had deceived the parser. However, no significant interaction was found on these reflexives in first-pass duration, go-past, or total reading time (all ps > .183). These results suggest that illusions of garden-path recovery are temporary, and the parser ultimately reanalyzes the structure successfully, even when misled by retrieval of irrelevant constituents.

Comprehenders do posit unforced gaps

Douglas Roland ¹

¹ The University of Tokyo

While there is significant evidence suggesting that during comprehension, comprehenders evaluate multiple possible interpretations of a sentence, there is also evidence suggesting that comprehenders do not consider all possible continuations. Specifically, Staub et al. (2018) argued that, to avoid creating an unforced dependency, comprehenders do not consider a relative clause structure in sentences like “The announcement that the president is considering...” when the initial noun phrase (e.g., “announcement”) can take a nominal complement clause (e.g., “The announcement that the president is considering an intervention...”) – even when the relative clause continuation is more likely. We conducted a sentence completion study and self-paced reading time studies to replicate experiments 2 and 3 in Staub et al. and contrast their items with an alternate set of items consisting of the same initial noun + that + noun sequence, but a different verb. We found that when the alternate verb provided a better thematic fit with the two NPs, comprehenders did make the relative clause interpretation. This suggests that comprehenders do initially consider the relative clause interpretation for nominal complement clause taking nouns, but reject it in favor of the nominal complement clause interpretation when the noun+noun+verb triple does not match their expectations.

Competing structural pressures: Active antecedent search modulates gap prediction in Hebrew

Mandy Cartner¹, Edward Kishinevsky¹, Naama Gidron¹ & Aya Meltzer-Asscher¹

¹Tel Aviv University

We explore an interplay between filler-gap and cataphoric reflexive-antecedent dependencies, by embedding reflexive pronouns in fronted wh-fillers, e.g., 'which picture of herself', which trigger two forward-looking searches, for a gap and for an antecedent to the reflexive. In one SPR and one G-Maze experiment (60 participants each), we examined Hebrew reflexive-headed wh-questions in which a potential object gap position is filled, e.g., (1). (1) Which picture of herself did the {queen|king} see the girl admiring _? By manipulating the gender of the highest subject, we examine whether the absence of a grammatical antecedent for the reflexive disrupts gap prediction, as reflected in a filled-gap effect on the object (FGE), compared to a baseline. In the G-Maze, we found evidence for (a) Active antecedent search: longer RTs at the subject when it mismatches, rather than matches, the reflexive's gender, interaction: $p < .001$; (b) Modulated FGE: longer RTs at the object following a matching compared to a mismatching subject, interaction: $p = .01$. The results suggest that the parser is sensitive to the requirements of the cataphoric reflexive, insofar as modulating the prediction of an object gap. We also discuss methodological implications, comparing the G-Maze to a much noisier SPR.

Comparing simple and complex Turkish reflexives: Effects of semantic and syntactic factors

Metehan Oğuz¹ & Elsi Kaiser¹

¹ University of Southern California

Turkish has simple (*kendi*) and complex reflexives (*kendisi*). Both can be bound non-locally. Prior work yields conflicting claims: On one hand, both *kendi* and *kendisi* are independently proposed to be logophoric (e.g. Yakut'15, Issever'15), which predicts both should prefer SOURCE antecedents. On the other hand, some claim *kendisi* is a pronoun when used non-locally, which predicts it prefers PERCEIVERS (e.g. Kornfilt'01). Furthermore, some analyze *kendi* as strictly syntax-governed (e.g. Goksel/Karslake'05), which predicts it should NOT be sensitive to semantic role. We test these claims and, more broadly, investigate whether morphologically-distinct forms pattern differently (cf. form-specific accounts, e.g. Kaiser/Runner'08). Turkish speakers (n=101) indicated whether *kendi/kendisi* refers to a non-local subject/non-subject. We manipulated the subject's/non-subject's semantic role (source/perceiver, heard from/told) and whether subjects are sentence-initial/postposed (NP1-NP2-anaphor/NP2-anaphor-NP1). *Kendi* and *kendisi* pattern alike: Both are PERCEIVER-oriented ($p's < .05$), SUBJECT-oriented ($p's < .05$), and prefer salient, sentence-initial NPs ($p's < .001$). Since pronouns prefer perceivers (e.g. Tenny'03) and salient referents (e.g. Arnold'98), this suggests both *kendi* and *kendisi* can function as pronouns. Crucially, both are sensitive to the same factors, to the same degree. We take the absence of form-specific effects as evidence that their anaphoric category is the same (pronoun), in contrast to earlier studies.

How do non-native speakers interpret an implausible transitive sentence?

Yue Yu¹, Holly Branigan¹, Zhenguang Cai² & Martin Pickering¹

¹ The University of Edinburgh

² The Chinese University of Hong Kong

Some researchers propose that non-natives rely more on non-syntactic information than syntactic information, with certain accounts suggesting a primary reliance on non-syntactic information. Previous studies have shown that native speakers tend to change the syntactic representation to reanalyze a sentence. We conducted a structural priming experiment to investigate the processing of English implausible transitive structures by Mandarin-English speakers. Participants first heard an English active or passive sentence, either plausible or implausible, answered a comprehension question, and described a transitive-event picture in English. Comprehension question results showed more non-literal interpretations following implausible sentences than plausible sentences, and these non-literal interpretations did vary because of structures. This suggests that non-native speakers employ both syntactic and semantic information at the onset of comprehension simultaneously, with the two types of information interacting. Importantly, we found equivalent priming effects between implausible and plausible sentences, as well as between nonliterally interpreted implausible sentences and literally interpreted implausible sentences, indicating that non-natives tend to maintain the initial syntactic representation of an implausible passive sentence rather than reanalyze its syntactic structure. Comparing non-native and native speakers, we found non-natives did not interpret implausible sentences more non-literally, suggesting a greater reliance on semantic information than natives.

Integration and interpretation of doubly quantified sentences in Turkish

Nehir Aygül¹ & Markus Bader¹

¹ Goethe University Frankfurt

In English, doubly quantified sentences such as “A kid climbed every tree.” have two readings with either Surface Scope (SS) or Inverse scope (IS) of the quantifiers. For languages allowing the object to scramble before the subject, scope has been argued to be more strictly dependent on the linear order of the quantifiers. While English unquestionably shows the availability of IS readings, several scrambling languages are reported to be scope-rigid, lacking the IS reading. We present an experiment probing scope-rigidity in Turkish, a verb final language that is claimed to only allow the SS reading of the two quantifiers. In an on-going self-paced reading task, we prime different scope readings by three types of pictures (neutral, SS reading and IS reading) to probe the availability of different readings in sentences with canonical (SO) and scrambled (OS) word orders. To assess the final interpretation, participants judged how well sentence and picture matched following self-paced reading. Initial results (n=15) suggest the availability of the IS reading in Turkish, as revealed by an interaction between scope and word order in the picture acceptability judgement task. Reading time data will also be reported.

**Comprehension and production don't align: Evidence from referential forms
in Mandarin Chinese**

Yajun Liu ¹, Kenny Smith ¹ & Antonella Sorace ¹

¹The University of Edinburgh

This study investigates the relationship between comprehension and production of referential forms in adult Mandarin speakers. Mandarin allows both null and overt pronouns, e.g. Xiaohong chadian zhuangshang Xiaozi, (ta) xia-le yi tiao 'Xiaohong almost fell onto Xiaozi, and (she) was startled'. We ran two experiments where participants were asked either to interpret sentences featuring null/overt pronouns (i.e. deciding whether the antecedent is the subject or object of the preceding context sentence), or to produce sentences demonstrating whether a null/overt pronoun has to re-refer to the subject or object of the context sentence. In comprehension, though both pronoun types exhibit a strong subject bias, overt and null pronouns are respectively more likely to co-refer with object and subject antecedents. By contrast, these comprehension preferences are not observed in production: speakers do not preferentially use null pronouns when the antecedent is the subject, and in fact numerically use more overt pronouns for subject antecedents (albeit not statistically significant). These findings suggest that despite the intertwined relationship between comprehension and production, they may be driven by different underlying mechanisms. In ongoing work, we are investigating how these preferences play out in bilingual Mandarin speakers, since bilingualism has been associated with over-explicitness in reference.

Expectations for upcoming content: Do children reason about speakers' informativity goals?

Vilde Reksnes¹, Alice Rees¹, Ece Kucuk¹, Chris Cummins¹ & Hannah Rohde¹

¹University of Edinburgh

Research on typicality has disclosed seemingly contradictory patterns in comprehenders and speakers: typical content is easier for comprehenders to process (Kamide et al. 2003) but is less frequently produced by speakers (Brown & Dell 1987). However, recent work shows that comprehenders also pay attention to speakers' production preferences (e.g. Rohde et al. 2021, 2022) – the more the speaker's role as an intentional communicator is emphasised, the more comprehenders expect contributions about non-typical content, i.e., content that is cooperatively informative (Authors, submitted). Here, we ask whether children reason about speakers' informativity goals in adult-like ways. If child-directed speech favours mention of typical events and properties, particularly at younger ages (Bergey et al. 2021), children may expect speech to transparently reflect what the world is like. In ongoing data collection, participants (ages 5-11) complete sentences about what is found at different locations. A bare condition only mentions the location (e.g. "At the beach, there's _____"); a visible speaker condition uses first person and adds a photo of a speaker ("I'm at the beach, and there's _____"). So far, results (N=111) show that children expect more informative completions with the visible speaker, with a trend towards more adult-like behaviour as age increases.

**Contextual non-plural interpretations of 'some': Mouse-tracking evidence
for quick social reasoning in real time**

Wei Li¹, Martin Corley¹ & Hannah Rohde¹

¹ University of Edinburgh

Loy et al. (2019) showed that listeners are more likely to make an early commitment to the semantically-allowed meaning of 'some' as 'all' if it follows disfluent 'uh' in a context where larger values are socially undesirable (I ate, uh, some biscuits). Here, we varied the context to one where smaller values are socially undesirable interpretations of 'some'. In two experiments, we recorded participants' mouse movements in a web-based task as they heard fluent and disfluent utterances in a job interview context (I have, uh, some qualifications) and clicked on one of four images corresponding to specific interpretations of 'some'. Here, disfluency has the opposite effect, reducing the value participants associate with 'some': We found that participants are more likely to select images corresponding to one, or zero, qualifications, following disfluent utterances. However, their mouse movements show they are quick to commit to one qualification (experiment 1) and slow to commit to zero (experiment 2). This suggests that social context and manner of speech can combine to affect the interpretation of 'some' as an utterance unfolds. Extending its meaning to 'one' is relatively easy, but overwriting it with 'zero' (in effect, deciding that a speaker is lying) is more demanding.

Is being pragmatic effortful? Unraveling the cognitive cost of pragmatic processing using pupillometry and reaction times

Irene Mognon¹, Simone A. Sprenger¹, Diletta Comunello^{1,2} & Petra Hendriks¹

¹ Center for Language and Cognition Groningen, University of Groningen, Netherlands

² Goethe University Frankfurt, Germany

The sentence “Some of her friends are smart” can be taken to imply that “Not all her friends are smart”. Whether this type of pragmatic inference (= Scalar Implicature/SI) is effortful to process is a strongly debated issue. Previous Reaction Time (RT) studies suggest that SIs are delayed compared to literal interpretations; however, eyetracking studies have yielded mixed results. We investigated SI processing using RTs and a highly sensitive measure of cognitive effort: pupillometry. While their pupils were recorded, participants performed a Truth-Value Judgment Task with sentences that did or did not require a SI (e.g., “On some/all of the cards there are hearts” when 5 or 3 out of 5 cards have hearts). Participants’ autistic-like traits were measured using the Autism Quotient Questionnaire. Our RT results are in line with previous literature: interpreting sentences with SIs takes significantly more time than interpreting literal sentences (independently of autistic-like traits). Preliminary analysis of pupillometric data (using GAMMs) shows that SIs elicit stronger pupil dilations than literal sentences in participants with high autistic-like traits only, suggesting that SIs are effortful in that population. This work demonstrates the sensitivity of pupillometry for investigating pragmatic processing patterns that appear invisible at the behavioral level.

**Having an eye for irony: when fluid intelligence (but not working memory)
helps processing**

Marianna Kyriacou¹ & Franziska Köder¹

¹University of Oslo

Understanding ironic utterances (e.g., “what a bright day” expressed on a visibly gloomy morning), requires temporarily entertaining multiple interpretations in memory before eventually dismissing the literal one. We hypothesised that greater working memory (WM) and fluid intelligence (Gf) would facilitate the comprehension of irony due to increased processing capacity and superior problem-solving skills respectively. In an eye-tracking study, participants read stories containing literal or ironic phrases and answered comprehension questions. We estimated WM and Gf scores via cognitive tasks and analysed the data using mixed-effects models. WM did not influence any measures, but Gf interacted with irony. Low-Gf readers were significantly less likely to reread preceding context in the literal versus the ironic condition, and significantly less so than high-Gf readers, suggesting stronger commitment to literal meanings and/or greater difficulty in integrating irony. High- and low-Gf readers were equally accurate when responding to comprehension questions in the literal condition. However, greater Gf conferred a significant advantage in the irony condition, implying greater involvement of Gf in the processing of ironic compared to literal phrases, likely due to the presence of meaning ambiguity. Our study is the first to investigate the role of Gf in the comprehension and processing of irony.

An ERP Study on Korean Honorific Marker '-si-'

Jaewon Oh ^{1,2}, Seongeun Lee ^{3,2}, Jieun Kiaer ⁴ & Jiyeon Kim ^{1,2}

¹ Department of Linguistics, Seoul National University

² Brain and Humanities Lab, Seoul National University

³ Department of German Language & Literature, Seoul National University

⁴ Oriental Institute at Hertford College, University of Oxford

This study investigates the processing of the honorific marker '-si-' in Korean indirect and situational-subject honorifications. Grammatically, '-si-' is inserted only when the subject is the honoree (direct honorification, a) or something closely related (indirect honorification, b). However, there is an increasing trend of attaching it even when the subject is unrelated to the honoree (situational-subject honorification, c), despite it being considered ungrammatical. There has been little research on the cognitive processing of '-si-'. To address this gap, an EEG experiment with a naturalness judgment task was conducted, using a 2-by-2 design: the degree of relatedness between the subject and honoree (High/Low), and whether the honorific marker '-si-' was inserted (Honorific/Nonhonorific). A significant P600 effect and longer RT suggest that, although grammatical, Korean speakers feel uncomfortable with HN (High, Nonhonorific) sentences. This may be because Korean speakers are habitually exposed to indirect honorifics, thus expecting the insertion of '-si-' whenever the subject is closely related to the honoree. In contrast, situational-subject honorification sentences did not elicit a significant ERP component.

- a) gyosu-nim-kkeseo o-si-ne-yo.: Direct honorification
The professor_[+hon] comes.
- b) gyosu-nim, moja-ga meosji-si-ne-yo.: Indirect honorification
Professor, your hat_[+hon] looks nice.
- c) *gyosu-nim, ellibeiteo-neun jeo jjog-i-si-bnida.: Situational-subject honorification
Professor, the elevator_[+hon] is there.

Investigating the effect of prosodic markedness on the interpretation of simple disjunction in Romanian

Adina Camelia Bleotu¹, Rodica Ivan^{2,1}, Gabriela Bîlbîie¹, Mara Panaitescu¹, Monica Casa¹, Andreea Nicolae³, Anton Benz³ & Lyn Tieu⁴

¹ University of Bucharest

² Acuity Insights

³ Leibniz-Zentrum Allgemeine Sprachwissenschaft (ZAS) Berlin

⁴ University of Toronto

According to Horn's (1984) principle of division of pragmatic labor, marked forms should have marked meanings. We investigate this by looking at two prosodically distinct disjunctions in child and adult Romanian ('A sau B') with neutral rise-fall prosody and marked rise-fall-rise prosody, where both disjuncts are stressed. Previous studies in English, French, and Japanese report that adults interpret simple disjunction exclusively (A or B, but not both) or inclusively (A or B, possibly both), while children interpret it conjunctively (A & B) or inclusively (Singh et al. 2016, Tieu et al 2017). We ask whether similar preferences hold for Romanian and probe into the understudied role of prosody. Given adults' sensitivity to prosody (Gotzner et al. 2013), they may associate marked sau with marked meanings (exclusivity) more than children. We conducted a forced choice task (20 5-year-olds, 26 adults): one puppet made a guess with neutral 'sau', the other used marked 'sau', and participants chose the best guesser. We tested contexts where both disjuncts were true (2DT) and where only one was (1DT). While adults preferred neutral 'sau' in 2DT and marked 'sau' in 1DT, children selected both disjunctions indiscriminately. Thus, prosodically marked forms involve marked meanings only for adults.

Conceptual and pragmatic factors influencing the representations of core event components

James R. Kesan¹ & Monica L. Do¹

¹University of Chicago

We examined the conceptual and pragmatic factors that influence memory (Exp1) and language (Exp2) for the conceptually core elements of source-goal motion events – namely goals, or endpoints of motion. In Exp1, we presented animate/inanimate events to separate groups of participants and found that event endpoints were remembered more accurately in animate versus inanimate events. In Exp2 we additionally examined the influence of pragmatic factors related to audience design on participants' linguistic choices using an elicited production paradigm. We found that, unlike with sources or starting points of motion (Do et al., 2020), decisions to mention/omit goals were unaffected by whether the goal was already known or unknown to the interlocutor: speakers always mentioned goals even when it was already-known information (cf. Lockridge & Brennan, 2002). However, the strategies (i.e., definiteness, order of mention) used to discuss goals did vary with the goal's pragmatic status. Our results shed further light on the ways that pragmatic factors related to audience design differentially affect message generation for conceptually core (i.e., goals) versus peripheral (i.e., sources) event elements. Results from our memory study also demonstrate how representations of animacy may be context-sensitive, aligning with models that represent animacy as multi-dimensional and multi-factorial.

Processing differences between single and extended metaphors and similes

Emma K. Mathisen¹, Nicholas E. Allott¹ & Camilo R. Ronderos¹

¹University of Oslo

Are single and extended metaphors processed like similes? Comparison accounts (Gentner & Bowdle, 2008) claim that processing of metaphors and similes draw on the same cognitive mechanisms, while categorization views (Sperber & Wilson, 2008; Glucksberg & Haught, 2006) do not. In this study, we use an eye-tracking reading paradigm to investigate processing of single and extended metaphors as well as similes. 26 participants read context sentences with or without metaphors followed by target sentences with a metaphor or a simile drawing from the same conceptual domain as the metaphors in the context sentence. We analyzed reading times for the metaphor and simile vehicle of the target sentence. Metaphors were overall read faster than similes. Extended metaphors were read faster than single metaphors. Reading times for single and extended similes did not differ. The results are more in line with categorization accounts, since comparison accounts would predict that the processing of both figures of speech should pattern similarly when the figurative meaning is extended. Further, our results suggest that there is a processing difference between single and extended metaphors.

They stole a real Maximowa. The effect of gender congruency on the comprehension of unfamiliar artist-for-work metonymies in German

Christian Lang¹, Franziska Kretzschmar¹ & Sandra Hansen¹

¹ Leibniz Institute for the German Language

Novel producer-for-product metonymies are harder to process than familiar ones (e.g. read Needham vs. Dickens; Frisson & Pickering 2007), suggesting a familiarity effect. We tested a cultural aspect of familiarity, participants' sensitivity to sex distributions regarding the artist in the painter-for-work metonymy 'a real Rembrandt'. Since the artist's sex is typically preserved in the grammatical gender of the metonymic expression (Nübling et al. 2015), familiarity with this metonymic construction should be biased toward the more common sex. Our corpus analysis on German revealed that the construction is biased toward male painters (hits: 861 males vs. 10 females). In an implicit acceptability study we examined how participants comprehended the construction with the unfamiliar female painter, when sex and grammatical gender were congruent (fem-fem), incongruent-biased (fem-masc) or incongruent-unbiased (fem-neut). We instructed German participants (N=265) to correct a text about a fictitious female painter and manipulated the grammatical gender marking of the construction ('Sie haben einen/eine/ein echten/echte/echtes Maximowa gestohlen'; They stole a[masc/fem/neut] real[masc/fem/neut] Maximowa). A multinomial logistic regression revealed that the construction's sex bias did not influence responses, as participants maintained the original grammatical gender marking in their corrections. Also, all forms seemed acceptable, which contradicts the preservation of sex during meaning transfer.

**Perception of Emotions in Young Adults with Intellectual Disability:
Integration of Speech Channels**

Vered Shakuf¹ & Boaz M. Ben-David²

¹Department of communication disorders, Achva academic college

²Baruch Ivcher School of Psychology, Reichman University

In recent years, there have been increasing efforts to integrate individuals with intellectual disabilities (ID) into the community. Effective social interactions are critical for successful community integration. Evidence in the literature suggests that adults with ID have difficulties identifying emotions in speech, which may in turn negatively affect social interactions. Barriers in emotional speech perception can result from difficulties in understanding the lexical content of the utterance or the prosody (tone of voice). In the current study we adapted the Test for Rating of Emotions in Speech (T-RES), to test emotional speech perception of adults with ID. The adapted t-res contained 9 sentences neutral in their lexical content that conveyed one of three emotions (anger, happiness or sadness) in the prosodic channel and 9 sentences with neutral prosody that conveyed one of same three emotions in the lexical channel. Participants indicated whether they agree that the sentence conveys a predefined emotion (anger, happiness or sadness). Results show that intellectual disability impairs discrimination of spoken emotions, both in the prosodic and semantic channels. As the severity of ID increases, the discriminability of spoken emotions decreases. This hints on the role of primary cognitive abilities in basic identification of spoken emotions.

Asymmetries in metrical foot parsing: Evidence from eye tracking

Charles Redmon^{1 3}, Isabella Fritz¹, Nina Dumrukic² & Aditi Lahiri¹

¹ University of Oxford

² University of Cologne

³ University of Essex

Initially stressed disyllabic words in English can have either one metrical foot, hazel ([^hheɪ][zəl]), or two feet ([^hheɪ])([_llo:]). We investigated listeners' sensitivity to foot structure in word recognition through two eye tracking experiments. Listeners heard the first syllable fragment of either hazel or halo and selected which among two items completed the fragment. The target word was a member of the contrasting foot pair (i.e., hazel~halo). The competitor was a disyllabic word overlapping in onset orthography but differing in segmental phonology: e.g., habit ([^hhæ][bit]). Further, participants heard both matching and mismatching sequences (match: [heɪ] from hazel, target=hazel; mismatch: [heɪ] from hazel, target=halo). Exp1 presented the visual display only after playing the full fragment. In Exp2 the visual display was presented 1 second prior to fragment onset. Exp1 showed an asymmetry: 2-foot targets (halo) were delayed by ~200 ms when preceded by a fragment from a 1-foot word (hazel) but not the reverse (fixations to both foot types were equal after hearing a fragment from a 2-foot word). With preview time (Exp2), no effects of foot type or match/mismatch were found. These results show it is not the acoustics alone that govern word recognition, but the parsing of phonological structure.

Does prosodic prominence speed up language processing?

Barbara Zeyer¹ & Martina Penke¹

¹ University of Cologne

Research has shown that prosodic prominence influences word recall as prosodic prominent words are recalled better than words that are less prominent. In our study, we wanted to investigate whether prosodic prominence also exerts a more direct effect on on-line language processing. We conducted a word-monitoring task with 49 German native speakers where participants had to push a key as soon as they heard a previously defined target word in a pre-recorded sentence. We manipulated the prominence of the target words with the accent types L+H*, L*+H, L*, \emptyset . We predicted that target words accented with a prominent accent type (L+H* < L*+H < L*) would be recognized faster compared to target words that were deaccented (\emptyset). However, contrary to expectation, results revealed that the prominent accent types L+H* and L* led to slower mean reaction times than \emptyset . A linear mixed model yielded no significant effect of accent type. Likewise, pairwise comparisons of the accent types L+H*, L*+H, L* vs. \emptyset were non-significant. Our results indicate that prosodic prominence does not speed up word recognition, suggesting that prosodic prominence might not exert an immediate effect on language processing.

Spotting the lect: a study of multilectally literate adolescents in Norway

Anya Vinichenko¹, Unn Røyneland² & Øystein Vangsnes^{1,3}

¹ UiT The Arctic University of Norway

² University of Oslo

³ Western Norway University of Applied Sciences

Norway can be characterized as a multilectally literate language society. For historical reasons, standard written Norwegian comes in two distinct varieties: the majority standard Bokmål (BM) and the minority standard Nynorsk (NN). Furthermore, it is commonplace – especially among younger generations – to use “dialect-writing” in private digital communication. The differences in processing of these varieties are underresearched, but it has been shown that pupils receiving education in NN outperform pupils schooled in BM in most disciplines. Our investigation assesses the processing of and proficiency in these standard and dialectal varieties, intending to further examine the extralinguistic effects of multilectal literacy (e.g., academic achievement) among the mono-, bi-, and trilectally literate individuals. The preliminary data analysis for 140 adolescents schooled in NN (trilectally literate group) shows that these adolescents see their own dialect as a “real” written code, on par with BM and NN, but not other dialects. Additionally, the individuals that use dialect-writing more often in private communication are the least accurate at distinguishing it from the standard varieties. Surprisingly, dialect-writing appears to be the most effortful to process, compared to BM, NN, and even English, even though it is the most direct representation of spoken Norwegian.

Gestural representations of semantic concepts differ between blind and sighted individuals

Ezgi Mamus^{1,2}, Laura J. Speed¹, Gerardo Ortega³, Asifa Majid⁴ & Aslı Özyürek^{2,1}

¹ Radboud University

² Max Planck Institute for Psycholinguistics

³ University of Birmingham

⁴ University of Oxford

Recent gesture theories claim that gestures arise from sensorimotor simulations. Gesture forms are thought to reflect specific sensorimotor experience with objects. Studies examining gestural representations of concepts also revealed regularities in strategies used by sighted people. For example, manipulable objects triggering motor imagery result in the use of an acting strategy while non-manipulable objects based on visual imagery result in the use of a drawing strategy. One proposal is that people select salient features of their representations that fit the constraints of gestural depiction, and mostly motor and visuospatial features fit these constraints. In this pre-registered study, we asked whether lack of visual experience affects how concepts are mapped onto gestures. We compared gesture forms produced by 30 congenitally blind and 30 sighted Turkish people for concepts that rely on motor (manipulable objects) versus visual (non-manipulable objects and animals) information to different extents. We expected gestural forms to differ between concepts that rely more on visual than motor information. Indeed, blind gesturers were less likely than sighted gesturers to produce a gesture for visual concepts. Their gestures also relied less on strategies depicting visual features compared to sighted people's gestures. Thus, visual experience influences how concepts are depicted in gestures.

The L2 advantage in false memory tasks is not tied to linguistic proficiency

Agnieszka Konopka¹

¹ University of Aberdeen

Non-native (L2) speakers generate fewer false memories than native (L1) speakers. One account of this L1-L2 difference is that non-native proficiency limits activation of information in semantic networks (Arndt & Beato, 2017). Two online experiments tested this prediction by comparing L1 and L2 memory performance under conditions allowing ample study time. Participants (L1 vs. L2 speakers of English) studied pictures and recorded sentences (SVO picture descriptions) once or twice in Exp.1, and once or three times in Exp.2, and then received a recognition test with old sentences and semantically related lures. If false memory rates vary with levels of semantic activation, then L2 speakers should show native-like performance for sentences studied more than once. Instead, L2 speakers had consistently higher memory accuracy. Repeated study improved L1 performance in Exp.2 but not Exp.1, whereas L2 speakers showed a large repetition benefit in Exp.1, with no further benefit afforded by a third study opportunity in Exp.2. Thus, L1 speakers needed more study time to reach the same level of performance as L2 speakers did with a single repetition. The results are better explained by theories assuming enhanced retention of verbatim detail in L2 speakers (Bordag et al., 2021; Sampaio & Konopka, 2013).

It doesn't have to be perfect: Hindi verbs in the VWP

Myrte Vos^{1 2}, Arpita Gargesh³ & Gillian Ramchand¹

¹ UiT - The Arctic University of Norway

² Leiden University

³ Bangor University

The visual world paradigm (VWP) has recently been a useful tool in teasing out subtle distinctions within and across aspectual systems (Zhou et al. 2014, Foppolo et al. 2021, Minor et al. 2022). In Hindi, past events can be described through two kinds of perfective verb: Simplex (SV), a lexical verb with a perfective suffix, and Complex (CV), a lexical verb followed by a perfective light verb. CV constructions entail event completion, whereas SVs implicate it by default, but allow the completion reading to be canceled or only partially realized (Arunachalam & Kothari 2011, Altshuler 2014) – even for accomplishments. But unlike other perfectives tested using the VWP, Hindi SVs do not attract preferential looks to completed event representations (Wittenberg et al., in prep). We present an in-progress web-based VWP study contrasting three aspectual forms in Hindi: the simple and complex perfectives, and the progressive. Through combining offline picture-matching and online processing results, we hope to delineate the semantic space that Hindi SVs occupy. We predict that they will draw preferential looks to ongoing event representations – because they are in complementary distribution with CVs, which highlight the result state.

Availability of Emotional Words in Mono- and Bilinguals

Emilia Ezrina^{1 2} & Virginia Valian^{2 1}

¹The City University of New York, The Graduate Center

²The City University of New York, Hunter College

Availability is a heuristic used to assess frequencies and probabilities of various words based on the ease of their retrieval from memory. Emotional words may be retrieved more easily than neutral words. We assessed whether the availability of emotional words differs in L1 and L2 and in bi- and monolinguals. Monolingual, English-dominant, and non-English-dominant participants were presented with lists consisting of either 50% emotional (positive or negative) and 50% neutral English words, or a control list consisting of only neutral words. They subsequently provided frequency estimates of emotional words they performed a free recall task. Analysis showed that the frequencies of emotional words were overestimated, and more emotional words were recalled. Furthermore, participants falsely recalled more negative words. However, there were no differences between participants from the three language groups. Thus, emotional words appear equally available in monolinguals and in bilinguals, both in L1 and L2. These results may be explained by participants' high English proficiency. Alternatively, it is possible that emotional words, due to a greater number of associations and connotations, are more easily available regardless of proficiency level.

Sensorimotor semantic processing differentially facilitates the recognition of native and second language words

Jonathan Wehnert ¹, Agnieszka Konopka ², Katharina von Kriegstein ¹ & Brian Mathias ²

¹Chair of Cognitive and Clinical Neuroscience, Technische Universität Dresden, Germany

²School of Psychology, University of Aberdeen, United Kingdom

Whereas native languages (L1) are learned implicitly in natural environments, second languages (L2) are typically acquired explicitly in classroom settings. Differences in the ways in which L1 and L2 are attained may lead to differences in the extent to which sensorimotor systems contribute to L1 and L2 comprehension. Here we tested whether semantic motor associations are routinely activated during L1 and L2 word processing. A total of 210 German-English bilingual speakers completed a lexical decision task (Experiment 1) and a semantic decision task (Experiment 2) on visually-presented words in their L1 and L2 that were primed by auditorily-presented words. The prime and target words referred to objects that were related or unrelated in terms of the body movements used to manipulate the objects (e.g., piano-typewriter (related), binoculars-screwdriver (unrelated)). In both experiments, participants responded faster to related target words relative to unrelated target words in L2. No such priming effect was found for L1 words. The findings suggest that L2 semantic representations are linked with motoric features, consistent with embodied theories of language. Further, the activation of motor associations may be more advantageous for L2 than L1 word processing, consistent with asymmetric models of bilingual semantics.

**Perfect tense renders events into states: Empirical evidence from
individuation**

Natalia Jardon Perez ¹, Elena Marx ¹ & Eva Wittenberg ¹

¹Central European University, Vienna

Some things, like apples or jumps, are individuable(=countable), and some things, like sand or sleeping, are not. It has been shown that for event descriptions, individuation hinges on two factors: syntactic form in which the event is framed (mass:“jumping”/count:“a jump”), and the event’s inherent duration (punctual:“jump”/durative:“walk”). Here, we connect this literature to theories of tense: Past (“Larry walked”) preserves individability, whereas Perfect (“Larry has walked”) is argued to build nonindividuable states from past events (Parsons 1990), leading to the prediction that Past sentences should be more individuable than Perfect sentences. We extended Barner et al. (2007)’s paradigm, in which the DV was whether people quantified events in mass/count syntax based on individuation or other dimensions. We replicated the original results in Past tense: only durative events in mass syntax resisted individuation. However, in our extension, the Perfect led to significantly lower rates of individuation for durative count events, compared to Past. This difference is absent with punctual events, which always individuate. These results provide the first empirical evidence that Past leads to individuated construals of events, whereas Perfect indeed builds nonindividuable states, and support Barner et al.’s (2007) interpretation that event structure overrules grammar in individuation: mass/count, but also, tense.

The effects of tense on event representations during processing

Emma Wing¹ & Pasha Koval^{1 2}

¹University of Connecticut

²NYU Abu Dhabi

State-change events (clean the pot) activate representations of the object in both initial (dirty) and end (clean) states (Prystauka et al, 2023). However, linguistic constraints may limit the activation of conceptual representations of events during processing. Specifically, a semantic boundary between tense in the tense domain and the verb and aspectual information in the verbal domain may restrict event representations (Ramchand & Svenonius, 2014; Minor et al., 2022). We explored the potential effect of tense on event representations during processing in a series of 3 experiments. In Experiments 1 and 2, we established initial and end object-state activation patterns for verbs in English past and future tense separately. Our findings showed an interaction in the future tense that was not present in the past tense. To further explore the role of tense, we combined both tenses in Experiment 3. Interestingly, we found no interaction between tense and verb, but rather an interaction between tense and object-state. These results suggest that tense affects event representations by adding information at the conceptual level, rather than by directly modifying the content of the verbal domain. Therefore, our findings indicate that tense does not interact with the verbal domain during processing.

Gender effects in lexico-semantic access and meaning integration mechanisms

Katarzyna Jankowiak¹, Marcin Naranowicz¹, Joanna Pawelczyk¹ & Dariusz Drążkowski²

¹ Faculty of English, Adam Mickiewicz University, Poznan, Poland

² Faculty of Psychology and Cognitive Science, Adam Mickiewicz University, Poznan, Poland

Previous event-related potential (ERP) studies have provided mixed results regarding the effects of participants' gender on specific ERP components. Here, we tested 62 (30 women, 32 men) Polish (L1) – English (L2) highly proficient unbalanced (L1-dominant) bilingual speakers in a semantic decision task, with semantically-correct, semantically-anomalous, stereotype-congruent, and stereotype-incongruent sentences. The results show ERP modulations by gender in two language-related ERP components: the N400, marking lexico-semantic access, and the Late Positive Complex (LPC), reflecting meaning integration mechanisms. First, scalp distribution differences were observed within the N400 time window (300–500 ms), whereby a classic N400 response with a right hemisphere bias was observed in females, while a wider distribution of the component was found in males. This points to a greater language lateralization among females, and a more symmetrical language processing in males. Second, within the LPC time frame (600–800 ms), a general trend was observed, with a more pronounced LPC response in females than males, indicating continuous meaning integration operations in females but not in males, irrespective of the sentence type. Altogether, the study reveals potential gender differences in the processing of linguistic stimuli, and points to the importance of controlling for participant gender ratio in psychophysiological research.

Quantification and sentence level polarity

Fredrik Heintat¹ & Eva Klingvall²

¹Linnaeus University

²Lund University

We report the results from an acceptability study and an EEG study on negation sensitive items in quantified contexts in Swedish. The aim was to see to what extent different negative quantifying expressions license polarity sensitive material. Four quantifiers were tested in addition to main clause negation (MCN) and a positive condition without any negation at all. The results from the acceptability study show that the negative quantifiers could be placed on a scale of negativity, ranging from the positive condition at one end and the most negative condition, MCN, at the other end. The quantifiers appeared in between these two extremes, in most cases being significantly different from both and also from each other. In the EEG study, on the other hand, only the positive condition showed effects (N400, P600, LLAN) relative to MCN on the polarity sensitive item, the quantifiers thus not showing significant differences from MCN. In this talk we will discuss the implications of our main findings: Firstly, that even licensors with lower degrees of negativity in acceptability are negative enough for successful licensing of polarity sensitive material in processing. Secondly, while in acceptability, negativity is scalar, in processing, it appears to be categorical.

Effect of signal degradation on sign language intelligibility

Cristina Tobías Figuerola¹, Carine Signoret¹, Emil Holmer¹ & Josefine Andin¹

¹Linköpings Universitet

Degradation of signal quality can have detrimental effects on language perception, resulting in increased effort and cognitive processing for both spoken and signed communication. In spoken language, the effects of two types of signal degradation, spectral degradation and background degradation, have been extensively investigated with respect to their effects on speech intelligibility. Spectral degradation involves restoring missing information that has been removed from the signal, while background degradation requires incorporating competing inputs. This extensive research has not been translated into sign language: the impact of signal degradation on sign language perception remains poorly understood, despite the fact that deaf individuals heavily rely on the quality of video stimuli to communicate with interpreters and relatives. In this study, we used degraded sign language videos at different levels, and participants were required to type the meaning of the presented stimuli and rate the difficulty of the task. By analyzing the responses of at least 50 participants using a 2x5 repeated-measures ANOVA, we aimed to understand the effect of degradation on sign language intelligibility. This can help the adaptation of environments for the deaf population when message perception is challenged. Enhancing thereafter accessibility and communication for deaf individuals.

Verb semantic structure effects in implicit causality: Evidence from Malay-speaking children and adults

Radina Mohamad Deli¹, Holly Branigan¹ & Vicky Chondrogianni¹

¹University of Edinburgh

In sentences such as ‘Ali (NP1) scolds Umar (NP2) because he (NP1/NP2)...’, verb implicit causality (IC) serves as a robust cue for referential processing. Studies (primarily of Indo-European languages) often associate IC bias (Subject-biased/Object-biased) with their semantic structure (i.e., thematic roles), which ultimately determines which NP is selected as referent (Hartshorne & Snedeker, 2013). Using an online sentence completion task, we examined whether IC verbs’ semantic structure affects pronoun assignment in Malay-speaking children (9- to 11- and 12- to 17-year-olds) and adults for 24 verbs: Agent-Patient (Action/Subject-bias), Agent-Evocator (Action/Object-bias), Stimulus-Experiencer (Psych/Subject-bias), and Experiencer-Stimulus (Psych/Object-bias). Subject-biased and Object-biased verbs are expected to elicit NP1 and NP2 continuations respectively. We measured NP continuations (NP1/NP2) as a function of IC bias (Subject-biased/Object-biased), verb type (Action/Psych), and group (younger children/older children/adults). We found main effects of IC bias (fewer NP2 responses in subject-biased condition), verb type and group (more NP2 responses for psych verbs and in younger children), and no interactions. Thus, we find evidence to support a semantic-structure account of IC biases, not only in adults but also in children, in a non-Indo-European language. NP2 prevalence for psych verbs and younger children may reflect weaker semantic information in Malay Stimulus-Experiencer verbs and referent-pronoun proximity respectively.

**Factors Conditioning Individual Differences In Heritage Language
Bilingualism: The Case Of Mandarin Sortal Classifiers**

Jiuzhou Hao ¹, Fatih Bayram ¹, Jorge González Alonso ^{1 2}, Theres Grüter ³, Maki Kubota ¹ &
Jason Rothman ^{1 2}

¹UiT The Arctic University of Norway

²Universidad Nebrija

³University of Hawai'i at Mānoa

While variation also characterizes linguistic outcomes in monolingual speakers, the degree of heritage language variation is significantly more extreme. This study investigates what factors predict the differential use of linguistic cues in processing Mandarin sortal classifiers. Classifiers encode semantic and grammatical form class information about the co-occurring nouns. Previous studies established that L2 speakers of Mandarin relied more on the semantic information than L1 speakers did. The current study tested sixty Mandarin heritage speakers (HSs) living in an English-speaking environment in a Visual World experiment. Results suggest that HSs who attended Mandarin Saturday Schools were more likely to rely on the semantic information than those who did not when controlling for Mandarin exposure and use both at home and in social contexts, and age onset acquisition of English. Additionally, HSs with more HL exposure and use at home relied less on the semantic information while those with more HL exposure and use in social contexts relied more on it. Taken together previous research, we attribute such patterns and directionality of these effects to how Mandarin classifiers are acquired, i.e., naturalistically vs., instructed.

Representing non-actuality in the online processing of negative and possibility utterances

Vishal Arvindam¹, Maxime Tulling² & Ailís Cournane³

¹University of California, Santa Cruz

²Université de Montreal

³New York University

Ongoing debate questions whether the processing of utterances describing non-actual situations like “The door is not open” or “Maybe the door is closed” involves only representing the described situation (a closed door) or whether we also represent the reversed situation (an open door) (one-step vs. two-step). We examined the real-time processing of non-actual language using an eye-tracking study. Participants (N=25) saw 16 animal pairs that shared a feature with a partly obscured third animal (e.g., bee & ant, identical legs). Participants heard clues for what type of animal was hiding through a positive (e.g., “It’s also a bee”; target = bee), negative (e.g., “It’s not a bee”; target = ant), or possible (e.g., “It’s maybe a bee”; target = unclear) utterance. Results show increased proportions of looks to the mentioned animal in comparison to the unmentioned animal for all three conditions in an early time-window (500-1500ms after noun onset), with more back-and-forth looking between the two options for the possibility condition. Only after 1500ms participants looked significantly more to the target animal in the negative condition. Our findings support a two-step model of negation processing and provide evidence for the simultaneous consideration of conflicting possibilities in the processing of uncertainty.

POSTER SESSION III

[PS-3.1]

Chinese character recognition in Deaf readers: a lexical decision megastudy

Philip Thierfelder ¹, Zhenguang G. Cai ¹, Shuting Huang ¹ & Hao Lin ²

¹The Chinese University of Hong Kong

²Shanghai International Studies University

In this large-scale study aimed at investigating Chinese character recognition processes, 25 Deaf participants from mainland China took part in a lexical decision experiment covering 2500 individual characters. The analysis looked at how accuracy rates and reaction times were affected by a range of lexical variables, including character frequency, age of acquisition, imageability, concreteness, orthographic-phonological regularity, homophone density, and stroke count. Of particular importance were the findings related to phonological and orthographic variables. Results indicated that homophone density did not affect Deaf participants' accuracy or reaction times. While Deaf readers' processing was not facilitated by higher orthographic-phonological regularity, hearing readers demonstrated improved accuracy and reduced reaction times under the same conditions. Additionally, Deaf readers displayed increased accuracy and faster reaction times for characters with a higher stroke count, while the hearing readers showed the opposite pattern. These findings suggest that Deaf readers may develop more efficient orthographic processing strategies due to their greater reliance on visual over phonological information. This study highlights the utility of a lexical decision megastudy database as an invaluable tool for psycholinguists and other researchers seeking to understand the distinctive aspects of language processing in deaf individuals and other reader populations with diverse linguistic backgrounds.

Independent effects of ageing and bilingualism on language processing

Eunice Fernandes ¹, Katrien Segaeert ², Foyzul Rahman ², Allison Wetterlin ¹ & Linda Wheeldon ¹

¹ University of Agder, Norway

² University of Birmingham, UK

Ageing and bilingualism have effects on language processing that have been investigated separately. We examined their combined impact on language comprehension (E1) and production (E2) (young and older monolinguals and bilinguals, N=40 each). In E1, words were embedded in high- or low-constraint sentences, or in random wordlists (RWO). Bilinguals detected words slower than monolinguals in low-constraint sentences compared to RWO (syntactic processing). Older (vs. young) adults and bilinguals (vs monolinguals) were faster in high- vs. low-constraint sentences (semantic processing). In E2, we crossed planning scope (large: the bag and the tray; small: the bag above the tray) and syntactic complexity (simple, the bag and the tray; complex, the bag and the pink tray). Bilinguals (vs. monolinguals) took longer to start producing complex large-scope phrases. Older (vs. young) adults took longer to plan small compared to large-scope phrases. Older adults and bilinguals relied more on pragmatic/semantic knowledge in comprehension, but syntactic processing was impoverished across modalities in bilinguals, while ageing affected production only. There were no AgexBilingualism interactions. While compatible with shallowed parsing theories, whereby representations are created based more on lexical-semantics and less on syntactic information, ageing and bilingualism effects differ across modalities and appear to be independent (not cumulative).

Effects of both ageing and bilingualism on attention and executive functions

Roksana Markiewicz 1, Foyzul Rahman 1, Eunice G. Fernandes 2, Allison Wetterlin 2, Linda Wheeldon 2 & Katrien Segaert 1

1 University of Birmingham, UK

2 University of Agder, Norway

Both ageing and bilingualism can have positive and adverse effects on cognition. We investigated their combined impact on attention/executive functions in the Attention Network Task (ANT). We examined the impact of bilingual individual differences using objective measures of language proficiency (L2 vocabulary) and language switching (L1 and L2 switch costs). Group comparisons (young & older mono- & bilinguals, N=40 each) revealed: age decreases alerting ($p < .001$) and increases executive (inhibitory) control performance ($p < .001$), for mono- and bilinguals alike (interactions: $p > .1$). For orienting, bilingual young adults perform better than monolingual young adults ($p < .06$), but, bilingual older adults perform worse than monolingual older adults ($p < .02$). There are limited effects of individual difference measures (N=177): proficiency improves orienting performance for young and older bilinguals alike; no relationships with switching performance were found. We show clear adverse (alerting) and protective (executive control) effects of aging which are in line with the literature (e.g. Verissimo et al. 2022 Nature Human Behaviour), while the bilingualism effects for attention/executive functions are less clear.

The Influence of Language Modes on Heritage Speakers' Speech Categorical Perception: Insights from Mandarin-Taiwanese Bilingual Speakers

Yu-Hao Chen 1 & Chia-Hsuan Liao 2

1 National Yang Ming Chiao Tung University

2 National Tsing Hua University

Previous studies indicate bilinguals' language modes can modulate their lexical retrieval, but its role in phonological knowledge remains less clear. This study examined whether bilinguals' phonemic boundary of stop consonants in the less dominant language would shift in different language modes. Mandarin and Taiwanese place different boundaries for voiceless stops. Targeting at Mandarin-dominant heritage speakers of Taiwanese, we manipulated language modes with a 20-minute social interaction game between experiment sections, where they could code switch between languages. Participants (N=19) were expected to shift from a dominant Mandarin mode to a bilingual mode after the game. Each experiment section contained (1) a critical sound identification task involving categorization of syllable-initial stops on the /pi-/p^hi/ continuum, and (2) a control Taiwanese lexical decision task, as prior work showed that being in a bilingual mode improves lexical retrieval. The results suggest our manipulation of language modes was effective: when in a bilingual mode, participants could reject pseudowords more quickly and accurately. However, the boundary of the two phonemes /p/ and /p^h/ seemed to be robust, despite different language modes. These findings imply that although language modes could modulate heritage speakers' lexical performances, phonemic representations were less affected by language modes.

L1 speakers retain conceptualized, L2 learners salient formal grammatical information

Denisa Bordag¹, Andreas Opitz¹ & Alberto Furgoni¹

¹Universität Leipzig

We tracked eye-movements of L1/L2-German speakers while they read the same or grammatically changed sentences twice (14 intervening sentences). Comparing changed to same regions at the second presentation, longer fixations indicated that the change was registered. L1-participants (N=64) registered number and tense changes when they involved differences in meaning with respect to amount/plurality and time. Their ability to register only formal difference between generic singular and plural (A bike is/Bikes are ecological means of transportation) and between tenses of equivalent temporal meaning (German Präteritum and Perfekt, both simple past meaning) was reduced/absent. L2-participants (N=62) were more sensitive to changes involving salient formal differences rather than meaning differences. They failed to register number changes (Fahrrad/bike–Fahrräder/bikes), also in specific contexts (The bike is/The bikes are broken). Similarly to L1-participants, they were sensitive to differences between Perfekt (hat gespielt-played) and Present (spielt-plays). However, in contrast to L1, they also registered differences between Perfekt (hat gespielt-played) and Präteritum (spielte-played) (both simple past but substantially different forms) but failed to register the difference between Present (spielt-plays) and Präteritum (spielte-played) (different temporal meaning but less salient formal difference).

Adaptive Resonance Theory as a computational model of learning inflection classes

Peter Dekker¹, Heikki Rasilo¹ & Bart de Boer¹

¹AI Lab, Vrije Universiteit Brussel

In this study, we investigate how humans use generalisation to learn verb forms for different grammatical persons and verbs and which role inflection classes play in this process. Inspired by recent advances in computational modelling of morphological processing (Elsner et al., 2019), we propose the task of unsupervised inflection class clustering: a computational model has to cluster verb forms of different paradigm cells from different lemmas together into inflection classes. As a model, we use Adaptive Resonance Theory (ART) (Carpenter & Grossberg, 1987), a cognitively inspired neural network architecture in which generalisation plays a central role, represented by the vigilance parameter. The network consists of an input layer, where new stimuli come in and a recognition layer, which represents learned categories. We performed experiments on a dataset of phonetic Latin verb forms (Beniamine et al., 2020), which suggest that our ART model is able to learn a system of inflection classes. In the future, we would like to evaluate the effect of supplying data in batches more akin to human conversation and we would like to analyse the ‘critical feature patterns’ inside the ART model, which explain which features in the input data a learned category attends to (Grossberg, 2020).

Do large language models identify pseudorelatives in French?

Adèle Hénot-Mortier ¹

¹Massachusetts Institute of Technology

French pseudorelatives (Radford, 1975), resemble relative clauses but exhibit a specific cluster of properties: (1) their head noun can be cliticized (e.g. Jean la(clitic) voit qui(relativizer) sourit, ‘Jean sees her smiling’), (2) they only appear below perception verbs, (3) they only feature subject gaps. Do language models (BERT, GPT-2...) trained on French learn these three properties? We test 8 LMs on 4800 semi-automatically generated sentences of the form “Pronoun (clitic) V (name) [gapped relative]” differing in (1) whether the name gets cliticized, (2) V’s type (perception vs attitude/action), (3) the gap’s position (subject/object). We observe a robust preference for subject-gaps (8/8 models) and more so under perception verbs (5/8 models), supporting (2)+(3). The clitic*gap*(verb type) interactions however are not captured (1/8 models), suggesting that LMs do not fundamentally distinguish pseudorelatives from relatives. We additionally propose an adaptation within the framework of surprisal theory (Hale 2001) of 2 psycholinguistic experiments by Pozniak et al. (2019). Our results suggest that LMs may favor a pseudorelative parse over a relative clause parse in French more than English, based on a tense-mismatch diagnostic. But this preference is not dependent on the verb’s type, contra (2) and the original study’s findings.

An Information Theoretic Analysis of Regressions in Reading

Ethan Wilcox¹, Tiago Pimentel¹, Clara Meister¹ & Ryan Cotterell¹

¹ETH Zürich

Why do people sometimes regress to previous words while reading? Reactivation-based hypotheses posit that regressions are used to reactivate previous material which cues or supports the current word (Kennedy et al., 1987; Lopopolo et al., 2019). Reanalysis-based hypotheses posit that readers regress to reanalyze previous material that has become less likely (Frazier et al., 1982; Bicknell et al., 2010). We argue that both of these qualitative theories can be operationalized in terms of Pointwise Mutual Information (PMI) between a regression’s source and target. Specifically, reactivation predicts that regressions occur between words that are associated with each other—implying high positive PMI values—whereas reanalysis predicts that regressions occur between words that make each other less likely—implying negative PMI values. We use language models to estimate the PMI between words in naturalistic reading corpora (three English, and one multilingual). We then train Poisson models to predict the number of regressions between word pairs within a sentence from PMI values. While negative values of PMI improve predictive power above baselines, positive values of PMI do not. Our results thus support reanalysis-based hypotheses, while giving an information-theoretic account to this language-processing behavior.

Learning English tense from sentential input: a neural network approach

Xiaomeng Ma¹

¹CUNY Graduate Center

Children understand and produce verb forms with tense/aspect at an early age: 2-year-olds can use tense marking on auxiliary verbs and the copula to tell if an event is in the past, present (or future) (Wagner, 2001; Valian 2006). They also use the past tense form (-ed) productively by making overregularization errors (Marcus et al. 1992). Although much is known about the emergence of the tensed forms, the influence of parental input remains unclear. This study used transformer models to understand the process of tense acquisition from sentential input. We trained the models on parents' input sentences from CHILDES and tested the models on classification tasks where the models had to output the tense (including 'future' time) of a given sentence. The models achieved over 90% accuracy on sentences with real verbs and around 50% accuracy with nonce verbs. By further examining the output probability, we found that 1) the models are sensitive to lexical forms (e.g. was, do) but not phrases (e.g. is going to), 2) the past tense '-ed' facilitates classification, and 3) temporal adverbs have little or no impact on tense classification.

Keep it truly maximal: Excluding random slopes for covariates inflates Type I errors or reduces power

João Veríssimo¹

¹University of Lisbon

Mixed-effects regression models are widely used in psycholinguistics because they are particularly suited to the analysis of clustered data. However, deciding on an appropriate model specification is not always straightforward, because a model's random-effects structure can be made more or less complex. Models that lack random slopes for an effect of interest can produce overconfident results, whereas considerations of computational complexity or lack of convergence can justify fitting more parsimonious models. Here, I examine a common simplification: including random slopes only for 'critical' (theory-relevant) predictors, but excluding random slopes for 'covariates' (those control predictors that correlate with the effect of interest). In a series of frequentist simulations, I show that models that fail to include random slopes for covariates show inflated Type I error rates or decreased power (depending on their correlational structure), but almost never achieve the 0.05 nominal rate. Models without a random correlation parameter (another common simplification) suffer from similar problems, but to a lesser degree. I recommend that mixed-effects models are kept 'truly maximal' and include random slopes for covariates. If simpler models are needed or desirable, I provide a well-performing alternative based on the residualisation of random effects.

Haitian Creole co-activation facilitates word recognition in Brazilian Portuguese

Pietra Cassol Rigatti¹, Mailce Borges Mota¹ & Kenneth Pugh^{3 2 4}

¹Universidade Federal de Santa Catarina

²Haskins Laboratories

³University of Connecticut

⁴Yale University

The languages of bilingual or multilingual people are co-activated at some level in their minds. This activation may be modulated by form overlap, as shown with cognate words. This study investigated Haitian Creole (HC) co-activation during word recognition in Brazilian Portuguese (BP). Children and teenagers (N = 48) who spoke HC as first or heritage language and BP as second language performed 4 tasks in BP: written lexical decision, spoken lexical decision, phonological awareness (PA), and letter identification. A receptive vocabulary in HC and a language history questionnaire were also answered. Lexical decision tasks were composed of different cognate (60) and noncognate (60) words across languages, and pseudowords (120). Analyses were performed using mixed-effects linear models in R. Preliminary results show that, compared to noncognates, cognates had a significant effect on lexical decisions in the written task as compared to the spoken task. Moreover, participants with higher PA scores showed overall higher accuracy in lexical decision tasks. These results demonstrate that exposure to HC at home helps recognizing written words in BP when they are cognates and that accuracy is influenced by PA.

The role of structural cues and recency in processing a pre-verbal anaphor in Turkish

Özge Bakay¹, Faruk Akkuş¹ & Brian Dillon¹

¹UMass Amherst

Real-time processing of long-distance dependencies relies on working memory resources to retrieve earlier items. Many dependencies are subject to structural constraints, e.g., anaphors are c-commanded by their clause-mate antecedents. Previous studies found mixed results regarding whether structurally-inaccessible distractors interfere in retrieving structurally-defined targets. However, most studies investigated post-verbal anaphors and/or placed the target and distractors in different clauses. These factors could obscure possible interference effects from distractors by making them relatively inaccessible in memory. Here we investigate the role of structural cues and recency in processing pre-verbal reciprocal in Turkish, an SOV language. In a 2x2 design, the stimuli manipulated NUMBER MATCH between a structurally-inaccessible, clause-mate distractor and reciprocal anaphor, and RECENCY of distractor, i.e., whether it followed or preceded the target. Participants' eye movements in a visual world paradigm were recorded (N subject = 68, N item = 24). The dependent variable was $\log(P(\text{looks-to-target})/P(\text{looks-to-distractor}))$. We saw main effects of MATCH and RECENCY at both reciprocal and following verb and an interaction at verb (p 's < .05). Pairwise comparisons revealed more looks to the number-matching distractor when it preceded the target (p 's < .001). Overall, our results provide evidence for selective interference from structurally-illicit distractors, which may be reduced when the target is more recent in memory.

Mi casa es tu posá: Exploring the bilingual mental lexicon in speakers of Spanish and Palenquero

Holly Zaharchuk¹, John Lipski¹ & Janet van Hell¹

¹The Pennsylvania State University

The present study investigates cross-language activation in a unique language pair and experimental setting. Palenquero is an Afro-Hispanic creole language comprising Caribbean Spanish and Central African Bantu features, with its lexicon largely derived from the Spanish superstrate. Sixty Spanish-Palenquero bilinguals completed two sets of in-person experiments at the home of a community leader in San Basilio de Palenque, Colombia, to understand the dynamics of cross-language interaction in two highly similar languages. Here we present results from 34 participants on an auditory dual-language lexical decision task in both Spanish and Palenquero. “Yes” responses were real words in the target language, while “no” responses were divided into two types: pseudowords in the target language and distractors in the non-target language. Higher accuracy on Spanish real words than on Spanish pseudowords and Palenquero distractors reflected a strong lexicality effect in the Spanish task that was absent in the Palenquero task. Comparing the two “no” response types revealed a high degree of cross-language interference from Spanish in the Palenquero task, with higher accuracy and slower reaction times on Spanish distractors than on Palenquero pseudowords. These results align with previous laboratory-based research showing differential patterns of cross-language activation according to relative language dominance.

**The role of semantic transparency in lexical access in Romance: Evidence
from French and Italian**

Irene Fally¹ & Eva Smolka^{1 2}

¹University of Vienna

²University of Konstanz

French and Italian belong to the same language family and share the same word formation mechanisms. Nonetheless, corpus studies show that the usage of these mechanisms diverges, especially in verb formation. To understand why this is the case, probing the representation of complex verbs in the mental lexicon is necessary. In this study, we examine how the morpho-semantic structure of complex verbs influences lexical access in French and Italian. We conducted two primed lexical decision experiments with 60 native speakers of French and Italian respectively, where we measure the effect of prior presentation of prefixed verbs (e.g. *comporter* ‘to behave’) to base verbs (e.g. *porter* ‘to carry’) on decision latencies of the base verbs. The study design takes into account semantic transparency using prime and target pairs with form-related semantically transparent (T), semantically opaque (O) and unrelated prefix verbs (U). The results show a facilitation effect for T condition only in Italian (13ms), while in French facilitation for both T and O condition are observed (30 & 23ms). This supports the hypothesis that morpho-semantic structures can be processed differently in two closely related languages with the same word formation mechanisms and available structures.

Lexical and morphological effects on eye movements while reading a sentence corpus in a polysynthetic language

Nina Zdorova ^{1,2}, Olga Parshina ³, Bela Ogly ¹, Anastasia Ziubanova ¹, Ekaterina Krasikova ¹,
Irina Bagirokova ^{1,2}, Susanna Makerova ⁴, Shamset Unarokova ⁴ & Olga Dragoy ^{1,2}

¹ HSE University

² Russian Academy of Sciences

³ University of Delaware

⁴ Adyghe State University

The widely studied effects of word frequency, length, POS, morphology on eye movements while reading, are barely studied in polysynthetic languages. To fill the gap, we conducted an eye-tracking study in West Circassian (a Circassic minority language spoken in southern Russia). We collected 50 participants reading the West Circassian Sentence Corpus (WCSC, created by the authors). Its pilot version of 60 sentences was read by 12 people, whereas its full version with 100 sentences was read by 37 other participants. Statistical analysis of basic eye-movement measures (FFD, GD, TT) was performed in R. The results confirmed universal effects of word frequency ($p < .005$ in all measures) and length ($p < .001$ in GD and TT). Previous word's length affected TT ($p = .001$). Neither frequency, nor length of a next word affected reading. Both morphological features (POS, number of lexical affixes) affected TT ($p < .05$). Speaking cross-linguistically, its influence of a previous/upcoming word in West Circassian resembles German (Kliegl et al., 2006), but not Russian (Laurinavichyute et al., 2019), whereas Russian and West Circassian show similarities in POS effect. Finally, a significantly increasing TT due to the high number of lexical affixes replicates Yan et al. (2014) in another polysynthetic language.

Meaning Extension of body part term 'HEAD': focusing on directionality

Jiyeong Kim ¹

¹Yale University

Semantic change is closely linked to our evolving understanding of the world. Body part terms provide a good opportunity to explore how the essential meaning of a word can expand across different languages, as they are intrinsic to human experience. This study aims to investigate whether Korean allows for an extension of the directional meaning of "head." In Korean, the term "head" often refers specifically to hair, so the expression "do head" means "I got a haircut." However, it never conveys directional meaning, as in English "I headed north." The hypothesis is that if there is a universal understanding of the body part term "head," then the meaning extension of this lexical item in Korean can be easily processed if it is parallel to the meaning already established in English. The results of the acceptability judgment indicate that Korean native speakers are significantly more likely to accept the directional meaning extension as natural, compared to the control condition.

Event structure predicts temporal order inferences in discourse comprehension

Elena Marx¹ & Eva Wittenberg¹

¹Central European University

One kind of temporal inference in discourse operates over linear order, exemplified by the classic “Mary married John. She got pregnant.” (cf. Schmerlinc 1971). Here, the inference is that Mary first married and then got pregnant. In a preregistered experiment, we asked whether this temporal inference is predictably modulated by event structure. We predict that states, which are cognitively less salient, serve as backgrounds for more salient events, locating states earlier in time. Participants (N=807, between-subjects) read descriptions like “Mary married[event]/was married to[state] John. She got[event]/was[state] pregnant” and indicated which happened first. Event type of both sentences (event/state) and linear order were crossed. The classic intuition was confirmed: When both clauses contain events, linear order drives temporal inferences. However, when event types differ between sentences, event structure reliably predicts temporal order: Irrespective of linear order, participants ordered states before events. A theoretically interesting pattern emerged for state-state descriptions: While people always ordered atelic (was-married) before telic (was-pregnant) states, they did so more when linguistically, pregnancy preceded marriage. Two alternative explanations are considered: markedness implicature against iconicity (Grice 1985), or effect-cause-encoding (Kehler 2006). Our results support a model of discourse comprehension in which event structural framing is crucial for (temporal) inferences.

**Event-related potentials elicited by similarity-based interference during
subject-verb dependency resolution**

Pia Schoknecht¹ & Shravan Vasishth¹

¹University of Potsdam

Similarity-based interference during cue-based retrieval has been examined in a vast number of behavioral studies (see Jäger et al., 2017 for a review and meta-analysis). In contrast, work on the electrophysiological correlates of interference has been sparse (but see e.g., Martin et al., 2012, 2014). Here, we present an ERP study on interference during subject-verb dependency resolution in German based on the design of Van Dyke (2007), crossing the factors syntactic and semantic interference. Cue-based retrieval theories postulate that the verb in a long-distance subject-verb dependency initiates retrieval of its subject. In line with this reasoning, the verb was the critical word of ERP analyses. In two EEG sessions, 81 monolingual native speakers of German with no history of neurological disease read 120 item quadruplets, presented word-by-word in a standard Latin-Square design (data collection is on-going). Bayesian mixed model analyses provided weak evidence for a small left anterior negativity (350 – 450 ms) for conditions with high semantic interference compared to conditions with low semantic interference (BF₁₀=2.0). In contrast, we found evidence against a syntactic effect (BF₁₀=0.25). This finding highlights the importance of semantic cues during subject-verb integration and speaks against syntax-first accounts of sentence processing.

Input frequency affects regularization of word order in the Verb Phrase vs Noun Phrase differently: Evidence from comprehension and production of silent gesture

Monica Do¹, Simon Kirby² & Susan Goldin-Meadow¹

¹ University of Chicago

² University of Edinburgh

In the Verb Phrase, there is a cognitive bias for Objects to linearly precede Verbs (SOV vs SVO; Goldin-Meadow et al., 2008). Similar studies in the Noun Phrase show a bias for Nouns to precede Adjectives (NounAdj vs AdjNoun; Do et al., 2022). We asked how (i) domain-general constraints from input frequency and (ii) ordering biases in the Verb Phrase and Noun Phrase jointly contribute to the emergence of typologically common SOV and NounAdj word orders. We used a silent gesture paradigm where participants were exposed to competing word orders at varying frequencies. At test, participants either selected (Exp1: Comprehension) or produced (Exp2: Production) the gesture sequence describing an event they saw. Participants in both studies were more likely to regularize towards majority orders in ObjectVerb compared to NounAdj conditions, suggesting that the word order bias towards ObjectVerb is more sensitive to input frequency; by contrast, the ordering bias towards NounAdj appears more robust to frequency effects. We concluded that constraints from input frequency affect regularization in the Verb Phrase differently than in the Noun Phrase. We discuss the implications of these findings for language typology and emergence. We also discuss methodological implications of comprehension-based versus production-based silent gesture studies.

Cross-linguistic influence from L1 and L2 in Ln Norwegian: comparing offline and online measures

Brechje van Osch¹, Merete Anderssen¹, Natalia Mitrofanova¹ & Ludovica Serratrice^{2,1}

¹UiT The Arctic University of Norway

²University of Reading

This study investigates cross-linguistic influence (CLI) in gender agreement with possessive pronouns in Ln Norwegian by native speakers of Spanish, Italian, Dutch or English. While Norwegian reflexive pronouns 'si' (feminine) 'sin' (masculine) and 'sitt' (neuter) agree in gender with the possessee noun, similar to in Spanish and Italian, the non-reflexive pronouns 'hans' (masculine) and 'hennes' (feminine) agree with the possessor (example 2), as in English and Dutch. Participants conducted a judgment task, a self-paced reading task, and Norwegian and English proficiency tasks. In judgment, both negative transfer from L1 Spanish and Italian and positive transfer from L2 English were observed. In self-paced reading, only CLI from the L1 was observed, suggesting that online and offline tasks can yield different patterns of CLI. We are currently collecting data from L1 speakers of German, Polish and Russian, which exhibit both types of agreement, to complement these data.

(1) Thomas danser med mora si på dansetimen.

Thomas_M dances with mother_{F POS,F} at dance class.

(2) Mia møter ikke Lucas lenger. Men hun møter mora hans på jobb.

Mia_F meets not Lucas_M anymore. But she_F meets mother_{F POS,M} at work.

**How new information affects coreference in semantically biased contexts:
from sentences to dialogues**

Dalia Cristerna Román¹, Juhani Järvikivi¹ & Evangelia Daskalaki¹

¹University of Alberta

Implicit causality (IC) and topicality influence coreference at the sentence-level, but their effects in broader discourse remain less studied. We investigated how IC and information status (old/new) affect coreference in English using dialogue-completion tasks with neutral and IC verbs. 60 dialogues consisted of chains of turns with a constant topic (old information), followed by a turn introducing a new entity (new information), and a final sentence with a main clause (with a neutral, NP1, or NP2 verb) and a because-clause to be completed. Additional sentence completion tasks were administered as a control. Participants (N=182) completed one of the tasks. GLMMs showed an interaction between verb bias (neutral/NP1/NP2) and item type (sentence/dialogue). In dialogues with neutral and NP1 verbs, subject continuations decreased if the subject of the main clause misaligned with the new entity (neutral: $p < 0.001$; NP1: $p < 0.001$). Contrastively, in dialogues with NP2 verbs, subject continuations increased when the main clause subject coreferred with the new entity ($p < 0.001$). Overall, this study shows that subjects' information status in broader discourse (new vs. old information alignment) affect their likelihood to be coreferred in because-clauses. Specifically, new rather than old information alignment seems to increase the chances of retrieval.

Don't forget the trace: facilitatory effects on matrix verbs following centre-embedded object relatives

Leonardo Concetti¹ & Vincenzo Moscati¹

¹Università degli Studi di Siena

A heavier processing load associated with Object Relatives (OR) compared to Subject Relatives (SR) is well documented (Staub 2010; Biondo et al. 2022, in Italian). A methodical inspection of the literature, however, reveals potential facilitatory effects found on the matrix verb following centre-embedded ORs, e.g. "the boy [that the girl sees ___ in the garden] SMILES" (Grodner & Gibson, 2005; Staub et al. 2017). We explore a possible explanation in terms of trace reactivation/decay. Decay measured at the matrix verb is expected to be lower in centre-embedded ORs than in SRs, since the trace in ORs is reactivated in a position closer to the matrix verb, facilitating matrix subject-verb agreement. We present the results of a novel eye-tracking experiment, comparing processing times on the matrix verb in centre-embedded SRs and ORs in Italian. Participants: 20 Italian-speaking adults. Materials: 60 target sentences (30 SRs, 30 ORs) + 40 fillers. Results: reading times measured on the matrix verb were lower in the OR condition (Imer, $p < 0.01$). This provides the first cross-linguistic support for the facilitatory effects associated with ORs and it will be discussed in relation to the working memory mechanisms proposed in activation-based retrieval models (Lewis & Vasishth, 2005).

The Influence of Ambient Noise on Contextual Formation and Lexical Retrieval in Speech Comprehension: Insights from Predictability Effects on the N200, N400, and LPC

Cheng-Hung Hsin^{1 2} & Chia-Ying Lee¹

¹Brain and Language Laboratory, Institute of Linguistics, Academia Sinica

²Biomedical Acoustic Signal Processing Lab, Research Center for Information Technology Innovation, Academia Sinica

This study aimed to investigate the influence of ambient noise on predictive processing during speech comprehension, specifically in relation to contextual formation and lexical retrieval. The N200, N400, and LPC responses were analyzed in response to high- and low-predictability sentences in two separate experiments. In Experiment 1, participants listened to spoken sentences with noise-masked sentence frames that aimed to influence contextual formation, while in Experiment 2, another group of participants listened to spoken sentences with noise-masked sentence-final words that aimed to influence lexical retrieval. The results revealed that predictive processing was resilient in the presence of contextually or lexically degraded conditions, as evidenced by significant predictability effects on the N400. However, the results also showed a significant predictability effect on the N200 when sentences were contextually degraded whereas a significant predictability effect on the LPC was observed when sentences were ended with a noisy final word. These findings suggest that listeners could achieve successful comprehension outcomes by activating early phonological analysis or late phonetic reanalysis in response to varying degrees of speech clarity and perceptual uncertainty.

**A unified account of the variation in distance effects in sentence
comprehension**

Shinnosuke Isono¹

¹University of Tokyo

In real-time sentence comprehension, longer dependencies are predicted to be more difficult to complete if human working memory is subject to distance-based decay and/or interference by intervening elements. Reading experiments, however, have shown that the effect of distance on the reading time varies depending on language (verb-medial vs. verb-final) and dependency type (thematic, filler-gap, etc.). The current study presents a processing model that provides a unified account for this seemingly inconsistent pattern, with two key assumptions. First, the unit of the representation relevant for the dependency distance is phrases rather than heads. Second, if multiple dependents precede the same head, they are precompiled into a single constituent with a single activation value. These assumptions are formalized using Combinatory Categorical Grammar (Steedman, 2000). It is demonstrated that this model can account for the presence and absence of distance effects in various constructions. The two key assumptions are also tested with corpus data. Linear mixed-effects regression analysis of Natural Stories Corpus (Futrell et al., 2021) shows that the processing cost calculated from these assumptions significantly increases the reading time.

**Reading gender stereotypes: The effects of Personality, Political Ideology,
and Gender Identity on gender stereotype processing**

Stephanie Hammond-Thrasher¹ & Juhani Järvikivi¹

¹University of Alberta

Intrasentential gender role violations immediately disrupt language processing. However, this phenomenon has yet to be investigated for adjectival gender stereotype violations nor at the discourse level. Recent psycholinguistic evidence suggests that individual differences in personality, political ideology, and gender identity predict the perception of social stereotypes. However, it is unknown how these identity profiles affect the comprehension of gender stereotype violations. The present study investigates gender stereotype perceptions and their predictability by individual differences in personality, political ideology, and gender identity. Readers were presented with vignettes pairing gender stereotyped nouns (florist, butcher) and adjectives (tender, dominant) with explicit pronouns. Time and rating data indicated that gender stereotype violations disrupted language comprehension. Vignettes containing either noun- or adjective- level violations were read slower and rated as less sensible. Stories describing feminine roles performed by male agents were read slower and reported as less sensible. Vignettes associating both feminine traits and roles with male agents were reported as less sensible. Individuals with less binary gender identities, low conservatism, and high Honesty-Humility read vignettes containing any stereotype violations slower. These findings shed light on the perception of gender role violations and how individual differences in identity profiles modulate this phenomenon.

Encouraging prediction enhances predictive eye-movements in L2 speakers

Aine Ito ¹

¹National University of Singapore

We used the visual world paradigm to investigate whether encouraging prediction enhances prediction and facilitates comprehension in L2. 23 L2 English speakers listened to 64 predictive/non-predictive sentences while viewing 4 images (e.g., “The woman will read/buy ... the newspapers”; images: newspapers, rose, mango, bowl). In one block of the experiment, participants were asked to comprehend the sentence and click on the mentioned object as quickly as possible (comprehension task). In the other half, they were additionally asked to predict the sentence continuation and report whether their prediction was correct (prediction task). The task-order was counterbalanced across participants. We found significantly earlier predictive eye-movements in the prediction vs. comprehension task (by 802ms) in the comprehension-prediction task-order. This was not found in the prediction-comprehension task-order presumably due to a carryover effect from the prediction task. Additionally, participants were faster to move the mouse to the target in predictive vs. non-predictive sentences, and this difference was numerically larger in the prediction vs. comprehension task (615ms vs. 293ms). Thus, encouraging prediction can enhance prediction, suggesting that prediction is controllable in L2. It may also facilitate comprehension, suggesting that devoting more cognitive resources to prediction may not hinder a concurrent comprehension task in L2.

How much core is core-syntax? Age, literacy and obligatory control in the Italian gerund

Stefano Rastelli¹, Pietro Mingardi¹, Beatrice Iaria¹, Valerio Damiani¹, Giada Antonicelli²
& Paolo Canal³

¹Università di Pavia

²Basque Center on Cognition, Brain and Language

³IUSS - Pavia

Obligatory control in the Italian gerund (OCG) belongs to core syntax, a module supposedly unaffected by external variables. Readers of (1) should invariantly coindex PRO with the subject of the matrix clause ('controller'):

(1) Maria_a incontra Piero_b PRO_a uscendo di casa

'Maria_a meets Pietro_b leaving_a home'

In our similarity-judgment SPR task, 47 participants (aged 18-80) read target sentences like (1) featuring the OCG followed by either a finite-verb matching probe (PRO = main clause subject_a) or a mismatching (PRO = object_b) one. Participants evaluated if the probe matched the target. The ROI was the disambiguating word. We tested if probe's (log-transformed) reading times were affected by verb semantics (temporal vs. causal), verb frequency, linearization (gerund position), probe condition, participants' literacy and age using an LMM model. We tested accuracy and (log-transformed) RTs in the evaluation task using a GLMM model with a binomial distribution and an LMM, respectively. We found that: (i) older readers were significantly slower and less accurate when choosing the OCG controller; (ii) high-literacy readers were faster than low-literate when target and probe coincided; (iii) ROIs were processed faster with fronted and modal gerunds. We argue that literacy and age might affect core syntactic representations.

**Important Predictors of Word Reading and Writing Abilities in Chinese
Among Fifth Graders in Mainland China**

Jieping Ou ¹, Ami Sambai ² & Hiroki Yoneda ²

¹Kansai Gaidai University

²University of Tsukuba

Previous studies conducted in Hong Kong have demonstrated that phonological skills, visual skills, naming speed, vocabulary knowledge, and morphological awareness are important cognitive-linguistic skills for learning to read and write traditional Chinese. Our study aimed to investigate the extent to which cognitive-linguistic skills contribute to the reading and writing processes in various ways among mainland Chinese children. A total of 119 fifth-grade primary school children were tested for the above-mentioned important cognitive-linguistic skills (i.e., phonological and visual skills, naming speed, vocabulary knowledge, and morphological awareness), and nonverbal IQ to examine their unique correlation to simplified Chinese word reading and writing performance. After statistically controlling nonverbal IQ and writing scores, phonological memory, and vocabulary knowledge significantly contributed to Chinese word reading accuracy, whereas morphological awareness uniquely predicted Chinese word writing when nonverbal IQ and reading scores were controlled. Path analyses further revealed that, without controlling writing performance, morphological awareness also predicted word reading accuracy along with phonological memory and vocabulary knowledge. The findings demonstrated the characteristics of word reading and writing acquisition in simplified Chinese, which highlighted the potential importance of morphological awareness in word reading and writing abilities in Chinese fifth graders.

Rapid adaptation doesn't mean automatic perception: a non-native accent study

Dario Fuentes Grandon¹ & Nina Kazanina¹

¹University of Bristol

In a series of experiments, we explored how listeners' adaptation to non-native accent changes perception at the sublexical level. English listeners were exposed to the speech of a Chilean speaker of English; their adaptation to specific non-native sounds (e.g. unaspirated /p*/ which for English listeners corresponds to /b/ in syllable initial position) was subsequently tested using a sound identification task. In previous research, we found evidence of listeners' adaptation at the sublexical level, i.e. an increase in sensitivity to non-native sounds. In an EEG study that is currently underway, we investigate whether adaptation involves changes in the automaticity of non-native accent perception. We are using a combination of an oddball paradigm with Fast Periodic Auditory Stimulation (FPAS), a technique used to explore passive and automatic perception. The participants' ability to perceive non-native phonological contrasts was tested using a stream of syllables (e.g. prevoiced /b/ v/s unaspirated /p*/ in [ba-ba-ba-ba-pa*-ba-ba...]). Our results so far show evidence of accent adaptation in the behavioural tasks but not in the FPAS-oddball task. This pattern suggests that when listeners undergo non-native accent adaptation, their perceptual retuning towards non-native sublexical units is a result of a process that is active and controlled rather than automatic.

The effect of cumulative English exposure on online processing of Spanish grammatical gender in school-aged children

Alisa Baron¹ & Katrina Connell²

¹University of Rhode Island

²NA

This study investigated grammatical gender processing in school-aged Spanish-speaking children in Mexico and Texas. A visual world paradigm with a 4-picture display was used where the target noun was heard with a gendered article that was in a context where all distractors were the same gender as the target noun, all distractors were a different gender than the target noun, or all distractors were the opposite gender than the target noun but the audio included an ungrammatical article. We investigated 50 children who were exposed to Spanish since infancy and began learning English at various ages. A linear mixed-effects model on fixations during the target noun revealed that children with higher cumulative English exposure (CEE) showed a weaker facilitatory effect of grammatical gender compared to children with lower CEE. All children were significantly (and equally) inhibited when they heard the ungrammatical article. Results revealed an effect of differential use of masculine vs. feminine articles. Children across all levels of language exposure were using the gender cue to facilitate processing. Higher CEE may reduce sensitivity to grammatical gender in processing for children learning Spanish as their first language but does not seem to affect their sensitivity to an article-noun pair's grammaticality.

The role of visual cues in encoding interference during sentence processing

Niki Koesterich¹ & Aya Meltzer-Asscher¹

¹Tel Aviv University

Encoding interface (EI) in sentence processing is the degradation of memory representations when features are shared between lexical items in working memory, which arises even when the overlapping features are not relevant for retrieval. This study examines the possibility of extra-linguistic visual cues modulating EI effects. Specifically, whether distinct spatial features help differentiate between otherwise similar words. To test this, we ran two experiments in Hebrew, with sentences such as (1).

- (1) The donor_{M/F} delayed the researcher_F that the lazy and dependent interns disappointed_{RP,F/∅} throughout the grant approval process
Comprehension question:

Distractor: Did the interns disappoint the donor_{F/M}?

Target: Did the interns disappoint the researcher?

In both experiments, words appeared on the screen one at a time (350ms + 50ms ISI), followed by a comprehension question. Presentation mode was manipulated between experiments, with central presentation of the words in Experiment 1, and moving window presentation in Experiment 2. Preliminary results (n = 42 participants out of planned 64) showed strong EI effects (lower accuracy when the two NPs are similar) in both display types, with no difference between the experiments. This suggests that visual cues of this sort have a limited effect, if any, on mitigating EI in reading.

Working memory modulates parafoveal processing

Anastasia Stoops^{1 2} & Kiel Christianson^{1 3}

¹University of Illinois at Urbana-Champaign

²National Center for Supercomputing Applications

³Beckman Institute for the Advanced Science

English readers with higher working memory have longer saccades, suggesting more efficient parafoveal word processing (Luke et al., 2018). This study examined the role of working memory on the parafoveal processing of Russian subject/object grammatical case. Previous eye-tracking boundary-change studies have established that skilled Russian readers use grammatical case available in the parafovea (Stoops & Christianson, 2017; 2019; 2020). Readers are disrupted by parafoveally viewed ungrammatical case markers when, upon fixation, they see the grammatical case, suggesting that readers started to interpret the sentence consistent with the information available in the parafovea. This study used participants' working memory (Conway, 2005) and preview manipulation data from Stoops and Christianson (2017, 2019, 2020) to predict eye-movement measures. Results revealed a main effect of working memory in both gaze and total time: readers with higher working memory had shorter gaze and total reading times. Working memory interacted with related preview in both gaze and total time in different directions: readers with higher working memory were more disrupted by the related preview in gaze while lower working memory readers showed disruption in total time. Results show how working memory modulates the time-course for parafoveal processing of morphological information.

Language learners' eye-movement corpus: Creation, analysis and prediction

Hui-Chuan Lu¹, Li Chi Kao¹, An Chung Cheng² & Wen-Hsiang Lu¹

¹ National Cheng Kung University, Taiwan

² University of Toledo, USA

This study introduces a corpus of eye-tracking data from Chinese-speaking learners of Spanish as a third language in Taiwan. The construction of the corpus aims to compile the data to develop a model of noticing and attention in input processing through machine learning methods to predict learner behaviors and verify the predictability test. By collecting data from eye-movement experiments as feature vectors and using learner behaviors as class labels, we have applied KNN algorithm and Random Forest to predict learner behaviors. Then, the performance of prediction will be evaluated to better understand the relationship between learner behaviors and language learning outcomes. The eye-tracking experiments included indexes of eye movement recordings reading sentences and texts containing temporal references in Spanish. The tenses in Chinese are expressed with aspect markers, lexical references, and contextual cues, which are quite different from those inflectional languages such as Spanish. Chinese-speaking learners of Spanish have found the learning of Spanish verbal inflections and their functions particularly challenging. The accumulated data collected from eye-movement experiments since 2022 focus on the Spanish morphological tenses and temporal lexical references during a sentence or text reading. We will discuss the prospective uses of this corpus and its further development plans.

**Influence of Question Types on Multiple-Document Reading Processes in a
Second Language: An Eye-Tracking Study**

Yuko Hijikata¹, Ryuya Komuro^{2,3}, Chikako Hanawa², Na Ta², Ryo Mizugaki²,

Keiya Tando², Tomoko Ogiso⁴ & Yuji Ushiro¹

¹University of Tsukuba

²Graduate School, University of Tsukuba

³Japan Society for the Promotion of Science

⁴University of Toyama

Although multiple-document reading is important in first and second languages, few researchers have scrutinized intertextual integration among second language (L2) readers through eye tracking, with the exception of Prichard and Atkins (2020). To address this deficiency, we conducted an eye-tracking experiment to investigate how multiple-document reading in L2 is affected by question types. Japanese graduate and undergraduate students were instructed to read 16 sets of English passages, each comprising an introductory sentence, two four-sentence-long passages, a comprehension question, and four answer options. Half of the comprehension questions required the participants to integrate information from the two passages, whereas the other half asked about the content of one of the passages. Half of the integration questions engaged the participants in identifying similarities between the passages, whereas the other half were intended to pinpoint differences. The participants' eye movement measurements, response time to each question, and comprehension accuracy were analyzed. We found that the integration questions contributed to evenly distributed fixations between the two passages. Moreover, the integration questions focusing on similarities caused the readers to produce more fixations than those asking them to detect differences. In conclusion, the question types contributed to multiple-document reading in L2.

**Maintaining Syntactic Positions and Thematic Roles in Memory: Evidence
from Ditransitive Alternations in English**

Matthew Kogan¹ & Matthew Wagers¹

¹University of California, Santa Cruz

Cue-based-retrieval models are often uncommitted to the linguistic units that serve as cues. We investigated the syntactic cues used during encoding/retrieval, testing whether syntactically-prominent Specifier positions guide dependency resolution. We manipulated structures intervening on the subject-verb dependency, using the ditransitive alternation in English to contrast the Double Object (DO), where the Goal argument is a Specifier, with the Prepositional Dative (PP), where the Goal is a Complement. (1) The chef who heard that the waiter handed {the guest the meal | the meal to the guest} was late. We hypothesized that the DO-Goal was similar to a clausal subject, as an animate specifier. In an SPR study, we crossed Structure with the locus of modification (Agent, Goal, Theme), as modified interveners are more likely to interfere. We predicted slowdowns at the VP region in DO conditions, reflecting interference during retrieval due to cue-overload of the DO-Goal. Results indicated slower RTs at the VP in Goal-Modified PP conditions, contrary to initial predictions. These results mirror previous work observing interference from prepositional phrase interveners, but not direct object interveners. As thematic roles remained constant, this pattern implicates a syntactic gating mechanism, sensitive to syntactic distinctions between proximal/distal VP arguments and grammaticalized thematic-hierarchies.

Domain-sensitivity of sentence memory and (lack of) temporal contiguity effects

Lalitha Balachandran¹, Stephanie Rich¹ & Matt Wagers¹

¹ University of California, Santa Cruz

Retrieval/encoding interference are well-established in sentence comprehension, but less is known about the role of temporal organization. Word recall studies show temporal contiguity effects (TCEs), where correct recall of word n improves recall of word $n+1$ within shared encoding contexts (EnCs). We investigate how this extends to sentence memory, testing whether clausal/prosodic boundaries demarcate EnCs. In a sentence recall study, we constructed multi-clause, comma-separated lists (Clauses 1-4), which we theorized would constitute 4 distinct EnCs. We manipulated whether an EnC was reactivated prior to recall using comprehension questions (CQs) targeting either Clause 2 or 3. We asked whether reactivating a clause would facilitate recall of that clause only, or also the next clause. Correct responses to a CQ improved later recall of the targeted clause only: better recall of Clause-2 did not lead to better recall of Clause-3 (and vice versa) - i.e., there was no forward TCE in correct recall. Incorrect responses to a CQ about Clause-2, however, led to lower recall accuracy not only for Clause-2 but also 3. Thus, TCEs emerged when higher-order representation of the sentence was weak. In sum, linguistic boundaries demarcate EnCs in memory, if retrieval is undisrupted.

On the unfolding of formality-register and morphosyntactic congruence effects in sentence processing: An eye-tracking study

Valentina N. Pescuma¹, Katja Maquate¹, Camilo R. Ronderos^{2,1}, Aine Ito^{3,1} & Pia Knoeferle^{1,4,5}

¹Department of German Studies and Linguistics, Humboldt-Universität zu Berlin, Germany

²Department of Philosophy, Classics, History of Art and Ideas, University of Oslo, Norway

³Department of English, Linguistics and Theatre Studies, National University of Singapore, Singapore

⁴Berlin School of Mind and Brain, Humboldt-Universität zu Berlin, Germany

⁵Einstein Center for Neurosciences Berlin-Charité, Berlin, Germany

This eye-tracking study investigated how German native-speaking adults process formality-register congruence and morphosyntactic congruence during sentence reading. Morphosyntactic processing has been robustly observed, but less attention has been given to potentially more variable knowledge effects, involving processes like reconciling (in)congruence between context formality and register of a target sentence. 40 participants read German context sentences conveying a formal or informal situation, and a target sentence containing a high- or low-register verb – e.g., Engl. transl.: “The policeman detained (high-register) / grabbed (low-register) the activist” – which matched or mismatched the formality of the context. We crossed this manipulation with that of subject-verb agreement (match/mismatch) – e.g., Engl. transl.: “The policeman *detain (high-register) / *grab (low-register) the activist”. Inspired by research on context incongruence effects, we predicted longer reading times at the verb and post-verb region for formality-register mismatches (vs. matches). At these regions, however, we only replicated effects of morphosyntactic violations; context formality-register congruence effects were more subtle and occurred later (in total time at the post-verb region). Our eye-tracking findings suggest that, at least in the presence of outright morphosyntactic violations, formality-register congruence effects require more time to unfold during sentence reading.

The Bilingual Moses Illusion: Evidence for Semantic Illusions in Highly Proficient Spanish-Catalan Bilingual Speakers

Ana Bautista¹, Montserrat Comesaña², Juan Haro³, Juliana Novo⁴ & Pilar Ferré³

¹Basque Center on Cognition, Brain and Language, Donostia-San Sebastian, Spain

²University of Minho, Braga, Portugal

³University of Rovira i Virgili, Tarragona, Spain

⁴University of Porto, Porto, Portugal

The tendency to overlook semantic inaccuracies in questions like ‘How many animals of each kind did Moses take on the ark?’, also known as the Moses illusion, was introduced into research more than forty years ago. Recently, the investigation on the Moses illusion has expanded to bilingual speakers, suggesting a disadvantage of the less-proficient language for noticing semantic mistakes. Nevertheless, studies in this regard are still limited and exclusively focused on unbalanced bilingual speakers. The aim of the present study was to investigate how the Moses illusion takes place in the languages of early and highly proficient Spanish-Catalan bilingual speakers. Participants completed a sentential judgment task in both of their languages, complemented with the self-paced reading technique. The analysis of semantic illusions did not find significant differences in the percentages of illusions elicited across languages. However, the analysis of reading time measures suggested a different processing of semantic illusions in Catalan. These results build on previous studies on the bilingual Moses illusion and broaden the type of bilingual speakers tested to date.

Transfer in progress: What grammatical aspect can tell us about the mapping of linguistic form and event structure

Kristian Nicolaisen¹ & Agnieszka Konopka²

¹Heidelberg University

²University of Aberdeen

When describing the world as it unfolds, speakers of English can express different aspectual properties of simple events, such as whether an event is ongoing (progressive aspect) or completed (perfect aspect). The present visual-world study manipulated aspectual distinctions to investigate how transfer-of-possession events are processed in native and non-native speakers' minds and to determine whether sentence forms can be mapped onto event structure without access to a lexicalized verb. We measured eye-movements during the comprehension of double-object sentences containing conventional or novel verbs marked with aspect to examine whether and how quickly morphosyntactic features contribute to the mapping of linguistic form onto temporal properties of event structures. Results show (i) that listeners use aspect cues to predict and integrate states of referents associated with different temporal event stages, and (ii) that sentence meanings can be derived in the absence of a lexical verb only by analyzing syntactic configurations, showing that aspect markings of novel verbs can be used to discern structural from lexical processing. Currently, we are collecting eye-tracking data from L2-listeners to investigate whether aspect elicits the same degree of activation of the concept of ongoingness in L2-processing in native speakers of German, a language without grammaticalized aspect.

An empirical investigation of Mandarin island constraint

Ruihua Mao¹, Barbara Hemforth¹ & Anne Abeillé¹

¹LLF, Université Paris Cité

An open question is whether Mandarin obeys island constraints (Huang 1982, Tsai 1994, Lu et al 2019, 2023). We ran 5 online experiments (Ibex, acceptability judgments) on wh-questions (in-situ and ex-situ) and relative clauses (RC), comparing extraction out of (nominal) subject and out of (nominal) object. As can be expected, we did not find any subject penalty in in-situ wh-questions (Myers 2012, Jin 2016). Subextraction out of subjects was easier than out of objects. We tested wh-ex-situ questions (Pan 2014), with and without Focus marker (shi) on the wh-word. We found a subject preference slightly modified by the presence of the focus marker. In two experiments on RC, crossing Syntactic Function(subject/object) and Extraction (extraction/subextraction), results again showed a general subject preference for subextraction. A processing explanation (subject conditions are easier because of shorter distance) does not hold for RC nor for in-situ questions. Another hypothesis is that there is no movement in Mandarin and a silent *pro* is always in situ (Drubig 2000). To test this, we ran the same conditions with a resumptive pronoun (*qi*), with the same results. We conclude that Mandarin doesn't show subject island constraints since it does not have true extraction.

A Study of Null Effects for the Use of Transcranial Direct Current Stimulation (tDCS) in Chinese character handwriting adults with character amnesia

Yichi Zhang¹ & Zhenguang Cai¹

¹The Chinese University of Hong Kong

There is supporting evidence for the hypothesis that anodal transcranial direct current stimulation applied to the left inferior frontal gyrus can enhance spelling and written language accuracy in English writing adults (Tsapkini et al., 2014). The left IFG is a renowned language region that has been linked to phonological processing in Chinese (Wu et al., 2012). In this study, we aimed to explore whether comparable effects could be demonstrated in Chinese writing adults with character amnesia, a condition whereby individuals are temporarily unable to write a character they certainly knew. We randomly assigned 38 adults to receive either anodal or sham stimulation over the left IFG. All participants underwent a Character Dictation Task before and after stimulation, with the stimulation session consisting of 20 minutes of either anodal or sham stimulation. Our findings do not provide conclusive evidence that anodal stimulation had an impact on reading performance for Chinese writing adults with character amnesia. These results suggest that further research is necessary to establish the parameters under which tDCS could improve spelling and language accuracy in character writing adult populations. It is possible that character amnesia may not be solely attributable to a phonological processing deficit in left IFG.

Semantic memory in schizophrenia spectrum disorder examined in novel probability and likelihood measures of semantic verbal fluency

Karl Neergaard ¹, Jeffrey Zemla ² & Rosa Ayesa ³

¹Innovation Hub Europe

²Syracuse University

³Valdecilla Biomedical Research Institute

Theories about whether performance in semantic verbal fluency among schizophrenia patients is indicative of a semantic deficit have depended on the task's primary variable, list length (total produced domain-specific words), and on variables extracted from the lists, such as clustering, switching, etc. A problem with the secondary variables is that they correlate highly with list length and as such only repeat its explanatory power. The purpose of this study was to devise and test novel variables that 1) do not correlate with list length, and 2) show predictive power in diagnosing the pathology. Jump probability consisted of evaluating the probability that fluency lists produced by experimental groups (154 healthy participants, and 144 patients) were similar to the transitions between words within a network created from the fluency lists of an external group (314 healthy participants). First five calculated the likelihood of whether the first five words of the experimental groups were similar to the external group's first five words. Neither jump probability or first five correlated with list length. Both variables significantly predicted the difference between experimental groups, making them valuable in future hypothesis generation as to the nature of semantic deficits among schizophrenia patients.

Short-term memory performance in children with Developmental Language Disorder (DLD)

Hanna B Cygan¹ & Martyna Brylka¹

¹Bioimaging Research Center, Institute of Physiology and Pathology of Hearing, Warsaw, Poland

Developmental language disorder (DLD) affects a child's ability to acquire and make use of their native language. Here we examined the relationship between short-term memory tasks and language abilities among 7–9-year-old children with DLD and a gender, age, and IQ-matched typically developing (TD) control group. Participants completed the Language Development Test, the Stanford-Binet IQ scale (SB5), and three memory tasks: immediate recall of the visually presented pictograms; an immediate recall of audio-visual sequences of syllables; and visuospatial memory task from the SB5. The results revealed diminished levels of short-term visual memory for objects and typical levels of visuospatial short-term memory span. The memory span for visual objects correlated significantly with scores on the vocabulary span subscale in children with DLD but not in the TD control group. The effect can be attributed to reduced ability to support memory through verbalization. Furtherly, we found diminished levels of audio-visual phonemic memory in children with DLD. They performed significantly worse than matched TD children and their performance was correlated with the scores obtained in each language subtest. This result indicates that non-linguistic spatial cues accompanying phoneme stimuli do not enable to overcome phonemic short-term memory impairments among children with DLD.

Processing Difficulties of Relative Clauses in Eastern Armenian

Mariam Asatryan¹

¹University of Massachusetts Amherst

This paper investigates the processing difficulty of Subject Relative Clauses (SRC) and Object Relative Clauses (ORC) in Eastern Armenian (EA), an understudied language with flexible word order and rich case morphology. This provides a testing ground for surprisal theory and Cue-based processing theory. The former theory posits that processing difficulty decreases as the conditional probability of an input increases, while the latter theory argues that processing difficulty increases when the head noun and subject of an RC share similar features, resulting in cue overload. Two self-paced reading experiments with a 2x2 design were conducted. Experiment 1 explored head noun type and relative clause type, with results contradicting Cue-based theory predictions, suggesting longer reading times for SRC as object modifier and ORCs as subject modifier. ORCs also demonstrated a penalty on the pronoun compared to the preceding region, supporting surprisal theory. Experiment 2 manipulated word order and relative clause type, yielding similar results, though without a penalty effect on the relative pronoun in scrambled word order cases. Overall, both experiments found ORC processing more challenging than SRC, with a pronoun penalty in ORC conditions, uniquely supporting surprisal theory and contributing novel findings to the field.

When valency doesn't count: testing structural constraints on reduced sentences in Italian

Mauro Vigano¹, Carlo Cecchetto^{1 2} & Caterina Donati³

¹ SFL (CNRS and Paris 8)

² Milan-Bicocca University

³ LLF (CNRS and UPCité)

The valency of predicates (intransitive vs. transitive) is a primitive according to descriptive grammars and much experimental research, although formal approaches assume as primitive the argument structure dichotomy passive/unaccusative (subject = theme: 'the letter was delivered/arrived') vs. active/unergative (subject = agent: 'Mary resigned/ fired someone'). We studied two types of reduced sentences in spoken Italian, e.g., "Nonna guarita" (grandma healed) and "La nonna, guarita" (the grandma, healed). They have full illocutionary force but structurally they are extremely reduced: they can contain only the past participle of some verbs and a (bare) noun. We applied a new method to collect acceptability ratings on a Likert-scale to investigate whether the two sentence types are constrained by the valency or by the argument structure variable and by negation, as predicted by our theoretical analysis. Methods: Audio items were administered online to 81 Italian speakers. A 2x2x3 repeated measures ANOVA tested the following factors: valency, sentence type, argument structure (passive/unaccusative, active/unergative, negation). Results: For all the factors, the analysis identified main effects and significant interactions. The post-hoc analyses showed significantly higher ratings for passive/unaccusative affirmative predicates regardless of valency and sentence type, supporting that argument structure is more relevant than the other factors.

Independent effects of age, education, verbal working memory, locality and morphosyntactic category on verb-related morphosyntactic production: Evidence from healthy aging

Marielena Soilemezidi^{1,2}, Marina Chrisikopoulou² & Valantis Fyndanis^{3,2}

¹ National and Kapodistrian University of Athens, Athens, Greece

² University of Oslo, Oslo, Norway

³ Cyprus University of Technology, Limassol, Cyprus

This study investigates the role of locality (i.e., critical cue being adjacent to the target or not), demographic factors (age, education, and sex), cognitive capacities (verbal working memory, verbal short-term memory, speed of processing, and inhibition), and morphosyntactic/morphosemantic category (time reference and grammatical aspect) in verb-related morphosyntactic/morphosemantic production. A sentence completion task tapping production of time reference and grammatical aspect in local and nonlocal configurations, and cognitive tasks measuring verbal working memory capacity, verbal short-term memory capacity, speed of processing, and inhibition were administered to 181 neurotypical Greek-speaking participants, aged between 19 and 80 years. Significant main effects of locality, age, education, verbal working memory capacity, and morphosyntactic/morphosemantic category emerged. Locality did not interact with any memory system, and production of time reference and aspect did not interact with any of the variables that yielded significant main effects (i.e., age, education, verbal working memory capacity, and locality). Results are discussed in light of relevant findings reported in the literature. It is suggested that both the processing component of verbal working memory and a procedural memory system (which might be long-term working memory for language, whose efficiency is estimated based on years of formal education) support verb-related morphosyntactic/morphosemantic production.

Fast and Efficient or Slow and Struggling? Comparing the response times of errors and targets in speeded word production

Christina Papoutsis¹, Elli Tourtouri^{1,2}, Vitória Piai³, Leonie F. Lampe^{4,5} & Antje Meyer^{1,3}

¹Max Planck Institute for Psycholinguistics, Nijmegen, The Netherlands

²Institute of Cognitive Science, Osnabrück University, Osnabrück, Germany

³Radboud University, Nijmegen, The Netherlands

⁴Department of Linguistics, University of Potsdam, Germany

⁵School of Psychological Sciences, Macquarie University, Australia

People speak faster but make more naming errors under time pressure. To better understand why speakers produce errors, previous research examined error types, error rates, and linguistic properties of target-error relations. Yet, it remains unknown how fast naming errors are produced relative to target words. In this study, we analyzed existing data from a speeded picture naming task (Lampe et al., 2022) and compared response time (RT) distributions for target and erroneous words through ex-Gaussian analyses. We found that errors were significantly slower than targets in the tail, but not in the normal part of the distribution. This suggests that cognitive processes during time-constrained word production can break down in different ways, resulting in either quick and efficient or slow and effortful errors. Moreover, semantic errors were produced faster than other errors (e.g., visual, unrelated, etc.), though slower than targets. This suggests timing differences in production process breakdowns resulting in distinct error types. We discuss the findings by considering differential breakdowns in lexical selection and self-monitoring. This study sheds light on the temporal dynamics of time-constraint erroneous word production, highlighting the need to further investigate the mechanisms underlying erroneous and normal word production and their potential differences.

The prosodic word (tone accent phrase) is the core planning unit in Norwegian speech planning/production

Jade Sandstedt^{1,2}, Bror Magnus S. Strand¹ & Björn Lundquist¹

¹UiT - The Arctic University of Norway

²Volda University College

The prosodic word (PW) has been proposed as a planning unit in speech production (Levelt et al., 1999; Wynne et al., 2018) given that speech onset latencies (RT) are smaller for Dutch and English utterances with fewer PWs (keeping number of lexical items/syllables constant). The present study employs four speech production experiments to investigate the role of prosodic constituency (and resulting RTs) in prepared vs. on-line speech production in Norwegian—a pitch-accent language where PWs are distinctively demarcated by a complex system of stress and pitch accent patterns. We examine how RTs are modulated by number of syllables, lexical items, and prosodic words. A mixed-effects gamma regression model, accounting for random effects of participants, was used to analyse the RT data, revealing significant effects of number of PWs and number of syllables. However, no significant differences were found between polylexical compounds and monomorphemic disyllabic nouns, suggesting that speech planning latencies are foremost determined by phonological and prosodic form (number of syllables and prosodic words), rather than morphological complexity or number of lexical items. These results provide novel insights from a pitch-accent prosodic system which further highlight the role of prosodic units in incremental speech planning and production.

**Lexical Alignment to an Automated Chatbot is Rapid and Driven by
Communicative Utility**

Rachel Ostrand¹, Victor Ferreira² & David Piorkowski¹

¹IBM Research

²University of California, San Diego

Lexical alignment, when producers adapt their word choice to match their interlocutor's, occurs in both human-human and human-computer dialogue. We explore whether alignment is driven by the speaker's belief in its communicative utility, by investigating whether people lexically align more to an automated chatbot when it displays lower comprehension proficiency. In this experiment (N=120 participants), the chatbot first named groups of pictures; then the participant named the same pictures back. After each picture the participant named, the chatbot either successfully understood the referent and chose the correct picture, or did not understand and produced an error message. A between-participants condition determined the bot's responses to participants' word choice: (1) the bot only understood words it produced itself; (2) the bot understood words it produced plus a more common synonym; (3) 50/50 probability of understanding each word. Participants significantly aligned to the bot in all three conditions, compared to a control where participants were not exposed to the chatbot's preferred words (all $z > 9.9$, all $p < .0001$). Importantly, participants aligned significantly more when the bot's comprehension was contingent on alignment (Condition 1 vs. 2; $z = 2.4$, $p < .04$). These results support the hypothesis that alignment is driven (at least partly) by communicative utility, and people align more when they believe alignment will enhance the likelihood of communicative success.

Individual differences in the production of speech disfluencies

Franziska Schulz¹, Ruth Corps¹ & Antje Meyer^{1 2}

¹Max Planck Institute for Psycholinguistics, Nijmegen

²Radboud University, Nijmegen

Spontaneous speech often contains disfluencies like repetitions, silent or filled pauses. Previous research has largely focused on the language-based factors (e.g. planning difficulties) underlying the production of these disfluencies. But research has also shown that some speakers are more disfluent than others. What cognitive mechanisms underlie this difference? We reanalyzed a behavioural dataset of 112 participants, who were assessed twice on a battery of tasks testing linguistic knowledge, processing speed, non-verbal IQ, working memory, and basic production skills (Hintz et al., 2020, Scientific Data). Using the data from a spontaneous speech task, we assessed the length and lexical diversity of participants' speech and determined how often they produced different types of disfluencies. We then used a combination of correlations, network analysis, factor analysis and non-parametric regressions to investigate the relationship between these variables and individual differences in particular cognitive skills. When analysing the data, we found that individual differences in linguistic knowledge or processing speed were not related to the production of disfluencies. In contrast, we found a negative relationship between specific disfluency types (e.g., filled pauses) and individual differences in working memory and word production. We discuss our findings in relation to theories of language production.

Does Cross-Language Competition in Bilingual Language Production Always Exist?

Huanhuan Yin¹, Patrick Sturt¹ & Martin Pickering¹

¹University of Edinburgh

Previous studies (Costa et al., 2003; Herman et al., 1998) showed the words from bilinguals' first language are activated and cause interference in their second language production. However, such research has focused on closely-related language pairs. To investigate whether it's the same case in typologically distant language pairs, we conducted two picture-word interference experiments using Chinese-English bilinguals. In Experiment 1, we instructed 120 native speakers of Mandarin Chinese studying in the UK to name 44 pictures in their foreign language English while ignoring English auditory distractor words. In our critical condition, the distractor word (mouth) was phonologically related to the Chinese name of the picture (maozi-hat). To determine the possible loci of emerging effects, the same picture was also paired with words which were either semantically-related, phonologically-related, or unrelated to the English name of the picture. The stimulus onset asynchrony we used were -150, 0, and +150 ms. In Experiment 2, we used the same materials and design on 120 native English speakers. Our results showed the Chinese name of a picture is activated during word selection, but this activated name facilitates rather than interferes with the naming process, indicating there may not be cross-language competition in distant language pairs.

**Linguistic representations matter for pronoun production: evidence from
grammatical gender attraction**

Claudia Pañeda^{1,2}, Margaret Kandel³, Nasimeh Bahmanian⁴, Mercedes Martínez Bruera⁴,
Colin Phillips⁵ & Sol Lago⁴

¹University of the Basque Country

²University of Oviedo

³Harvard University

⁴Goethe University Frankfurt

⁵University of Maryland

Production models propose that uttering pronouns involves activating representations at (i) a conceptual level, containing the pronoun's conceptual referent; (ii) a linguistic/lemma level, containing morphosyntactic features of the pronoun's antecedent. This proposal was previously supported by findings of number attraction errors ('The key opened the cabinets above THEM'), which were attributed to interference from the non-antecedent noun 'cabinets' at the lemma level. But it is unclear at which level interference occurred because number is both syntactic and conceptual—plural nouns typically imply multiple referents. We present evidence from production experiments in Spanish demonstrating that pronoun attraction errors arise not only with number, but also with a strictly syntactic feature: the gender of inanimate nouns. Participants described videos of objects interacting. Target sentences (e.g., 'The shield hit the hats below IT') contained an antecedent ('shield') and an attractor ('hats') that matched or mismatched in number (experiment 1) or gender (experiment 2). We found more agreement errors in mismatch than match conditions with number (4.3% vs. 1.1%) and gender (6.2% vs. 3.5%). This shows that lemmas are accessed during pronoun production, but also that this process is competitive and more error-prone than previously assumed.

Word order priming with German dative experiencer verbs

Anna Jessen¹ & Robert Hartsuiker¹

¹Ghent University

The locus of structural priming is often considered to be an abstract constituent structure, but there is evidence that priming at other levels also plays a role. We tested structural priming with German dative verbs that alternate between the order of their arguments (Dat-V-Nom vs. Nom-V-Dat), such as *das 'Buch gefällt dem Mann' – 'dem Mann gefällt das Buch'*. These alternants differ in the order of their thematic roles, but don't obviously differ in their syntactic structure. We conducted two online written priming experiments, where a triplet containing a dative verb and two nouns were presented. In the prime triplet, one noun was colored blue. Participants (each $n=48$) were instructed to form a sentence using these words, and when a word was blue to start with that. There was one animate and one inanimate noun for the targets and the primes in Exp.1; two animate nouns as primes in Exp.2 (but same targets), to exclude animacy binding as a confound. We found a preference for Dat-Nom in both experiments, though slightly smaller in Exp.2. Importantly, there was a significant priming effect of 8% in both experiments. These findings suggest information structure (emphasis on thematic roles) as a locus of structural priming.

Sentence (pre)-planning or incrementality in neurotypical individuals and persons with aphasia (PWA)

Xabi Ansorena¹, Manuel Carreiras¹ & Simona Mancini¹

¹ Basque Center on Cognition, Brain and Language

A fundamental and yet unresolved question in sentence production is whether utterances are planned in advance or concurrently to their articulation (incrementally). Here, we address this issue with neurotypical individuals (N=45) and persons with aphasia (N=6, compared to 8 age-and-education matched controls). Participants were presented with an array of figures and required to describe the features and location of one of them (e.g., “the star is above the moon”). Across three blocks, sentence complexity was manipulated by increasing the number of features associated with the target (e.g. colors or elements inside, “the red star with dots is above the green the moon with crosses”). Between-block differences in speech-onset times (SOTs) would point to pre-planning, while similar latencies would indicate incrementality. Group differences in accuracy were analyzed to explore lexical selection; SOTs were used to test planning. Only PWA showed an increase in SOTs as sentence complexity augmented across blocks. Compared to the matched control group, PWAs revealed lower accuracy in the third block, and higher SOTs in all blocks. Results indicate that PWAs and controls may employ different planning strategies, and that sentence planning capacities can be affected in PWA for lexical selection and at the earliest planning stages.

From Brad Pitt to the Garden: The Impact of Agent Accessibility and Time Pressure in Dutch Sentence Production

Danbi Ahn¹ & Peter Hagoort^{1,2}

¹The Max Planck Institute for Psycholinguistics

²Donders Institute for Brain, Cognition and Behaviour, Radboud University

The Dutch language allows for flexible word order in sentences, giving speakers the freedom to place the agent or location first (e.g., Brad Pitt sings in the garden; In the garden sings Brad Pitt). Previous studies have suggested that such word order variation may be related to the accessibility of the agent. For example, in a corpus study, Kuiper et al. (2017) showed that sportscasters are more likely to say the name of the player later in the sentence during faster sports (horseracing) compared to slower sports (soccer), suggesting that sportscasters can say the sentences in an incremental way to aid lexical access of the names. To explore this further, we investigated the sentence production of Dutch speakers using famous people's names that were either more or less accessible, under varying time pressures. We analyzed the word order patterns and naming latency during sentence production. The preliminary data point towards a possibility that the Dutch word order may not be influenced by the accessibility of the agent's name or time pressure. Rather, speakers might plan their sentences non-incrementally, starting to speak later when the agent is less accessible, even when under high time pressure.

Syntactic status of numeral classifiers: Evidence from artificial language learning experiments

Fang Wang¹, Simon Kirby¹ & Jennifer Culbertson¹

¹Centre for Language Evolution, University of Edinburgh

Numeral classifiers are a noun categorization device found in many languages, particularly those used in East and Southeast Asia. Their syntactic status is debated: some theories treat them as forming a constituent with the noun, others with the numeral. Typological data on how classifiers, numerals, and nouns are ordered largely support the classifier-with-numeral hypothesis: orders in which the noun intervenes between the numeral and the classifier are unattested. However, typological evidence may be problematic in this case, because the distribution of classifiers is highly geographically constrained, and ordering tendencies may reflect language contact. In this study, we use artificial language learning experiments to look for new evidence of the syntactic status of numeral classifiers. Specifically, participants were taught a miniature artificial language consisting of nouns, numerals, and classifiers. Critically, the word order between the three word classes was held out during the training. Participants were tested on whether they have a preference for some word order patterns that are predicted by one of the two accounts. Results suggest that, if anything, learners in fact prefer the order that groups classifiers with numerals.

The role of attention for alignment from discourse particles

Rachel Williams¹, Diana Salcido-Padilla¹, Angela Almeida¹, Kyle Wolff¹ & Iva Ivanova¹

¹University of Texas at El Paso

Conversational partners sometimes reuse – or align to – aspects of each other’s language. We study the role of attentional load for alignment during comprehension, focusing on alignment to the discourse particle ‘like’. We predict heavier attentional involvement (a less automatic process) would result in less alignment under load, while a negligible attentional involvement (a more automatic process) would result in unaffected alignment under load. Proficient English speakers read and retold each of two short stories, before and after a manipulation (baseline and target retelling phases). The manipulation consists of listening to a recorded story (priming phase) that either contains many ‘like’ uses (145), moderate uses (61) or no uses. The attentional manipulation consisted in immersion in an unfamiliar city in Google Earth VR: one group of participants moved around with the hand-held controllers (heavy load condition), and another remained still (light load condition). Preliminary analyses show a marginal alignment effect for heavy ‘like’ prime (‘like’ production: baseline M=4.9, target M=8.8 likes) relative to no ‘like’ prime (‘like’ production: baseline M=8.7, target M=8.5), under lighter attentional load. These results are consistent with the prediction that heavier attention may preclude encoding of discourse particles – and therefore, subsequently aligning to them.

The role of sentence context and feedback in L1 and L2 novel word learning

Sophie Hoffmann¹, Annette Ugueto¹, Brian Mathias¹, Joost Rommers¹ & Agnieszka Konopka¹

¹University of Aberdeen

Listeners frequently encounter novel words in their native (L1) and non-native (L2) languages and must infer (and thereby learn) their meanings from context. Error-based prediction accounts suggest that inferring the wrong meaning (and then receiving disconfirmatory feedback) may result in better learning. This study compared learning of novel words after one or two study opportunities involving different sentence contexts. Eye-tracked participants (17 L1, 22 L2 English speakers) heard strongly-constraining and weakly-constraining English sentences (e.g., “Ted got the vaccine in his right...”; “Amy had a mosquito bite on her...”) ending in novel words (e.g., tolf) while viewing displays that contained pictures of four objects. They guessed which object the novel words referred to and received immediate feedback. Participants from both groups fixated and selected the correct object more often when hearing strongly-constraining than weakly-constraining sentences. At test, participants identified the object referred to by each novel word from a new four-object display. Accuracy was higher for twice-studied than once-studied words, and for words whose referents had been identified correctly during the second study opportunity. There was no L2 advantage in word learning. The findings suggest that supportive contexts facilitate inferring novel word meanings, without direct evidence that disconfirmatory feedback enhances learning.

Exploring mechanisms of early language development through cross-lab studies: challenges and opportunities

Itziar *Lozano¹, Anna *Duszyk-Bogorodzka², Ingeborg Sophie *Ribu³, Agnieszka Dynak¹, Przemysław Tomalski⁴, Franziska Köder⁵, Nina Gram Garmann⁶ & Ewa Haman¹

¹Department of Cognitive Psychology and Neurocognitive Science. Faculty of Psychology, University of Warsaw, Warsaw, Poland; ²Behavioural Neuroscience Lab, Institute of Psychology, SWPS University of Social Sciences and Humanities, Warsaw, Poland; ³Department of Vocational Teacher Education, Oslo Metropolitan University, Norway; ⁴Neurocognitive Development Lab, Institute of Psychology, Polish Academy of Sciences, Poland; ⁵Center for Multilingualism in Society across the Lifespan, University of Oslo, Norway; ⁶Department of Early Childhood Education, Oslo Metropolitan University, Norway.

Cross-lab studies are Big Team Science increasingly common in research on early language development. This new approach to science aims to improve research findings' replicability and achieve well-powered samples. Although cross-lab studies have several advantages, including contributing to building robust scientific knowledge, they also entail some challenges. Here, we present our multi-lab EEG and eye-tracking studies to illustrate the challenges and opportunities of conducting cross-lab science on the mechanisms of language development. Our studies explore two mechanisms of early lexical acquisition – semantic integration and mouth-looking – in monolingual and bilingual toddlers across two labs in Poland and Norway. Challenges comprise the need for early investing extensive time in planning (i.e., agreeing on theoretical background, predictions, design, and protocol), assigning clear roles, homogenizing systems and experimental set-ups, re-adjusting recruitment strategies, systematizing testing protocols, and adopting inclusive co-authorship policies. Opportunities include embracing cultural diversity across team members, participants, and materials, taking a multidisciplinary approach with diverse backgrounds and institutions, maximizing the speed of data collection, and enhancing sample representativity. We also argue throughout how Open Science practices facilitate structuring our work, speeding up our scientific outputs, and broadly sharing our materials and findings with the research community as we go.

The effect of labelling and sustained attention during parent-child interaction on novel-word retention

Ming Yean Sia ^{1 2}, Rajalakshmi Madhavan ^{1 2}, Xiaoyun Chen ³ & Nivedita Mani ^{1 2}

¹Psychology of Language Group, University of Göttingen, Göttingen, Germany

²Leibniz ScienceCampus Primate Cognition, Göttingen, Germany

³Lancaster University, Lancaster, United Kingdom

This study examines how parents and infants interact with objects of differing degrees of novelty in naturalistic play settings. In particular, we ask whether (i) infants systematically attend to more novel objects relative to familiar objects in interactions with parents (ii) parents preferentially provide more information about novel objects, i.e., label, relative to familiar objects and (iii) children's learning of novel word-object associations is affected by the frequency of object labelling and children's sustained attention towards the toys. Twenty parent-child dyads were allowed to play with four different toys, two familiar and two novel to the children (but familiar to the parents) as we examined their eye-movements and labelling behaviour during the play session. Finally, we tested children's recognition of the labelled novel objects. We predict that parents label novel objects more often than familiar objects and children show more sustained attention towards novel objects. Furthermore, within the novel objects, we predict that children will show improved recognition of objects they attended more to and were more frequently labelled. Such findings would highlight how the quality of social interaction between caregivers and infants is influenced by the objects in their natural environment, which in turn shapes learning.

The Effects of Input Consistency on Children's Language Learning

Imme Lammertink^{2,1}, Josje Verhagen¹ & Judith Rispen¹

¹ Amsterdam Center for Language and Communication, University of Amsterdam

² Centre for Language Studies, Radboud University

Children learn language from the input they receive but we know very little as to what characteristics of the input boost or hinder children's acquisition of linguistic structure. The main goal of this project is therefore to assess whether inconsistencies (i.e., substitution errors) in children's language input affect their cross situational word-, and rule learning in a novel fantasy language. Data collection is ongoing but preliminary data on 79 children aged between 8 and 10 years suggest that inconsistent language input has a negative impact on children's word learning: children that receive language input consisting of 12.5% inconsistent labels (n = 27 children) or 25% inconsistent labels (n = 18 children) have lower word learning accuracy rates as compared to children receiving input with consistent labels only (n = 34 children). We have no evidence for such difference in rule learning between the groups of children. Eventually outcomes of this experimental study will be interpreted in tandem with a corpus study on Peer Language to better understand how potential differences in the quality of peer language environments (e.g., in regular and special education settings) affect children's statistical language learning.

Cross-language masked prefix priming for early and late bilinguals

Jeonghwa Cho¹ & Jonathan Brennan¹

¹University of Michigan

Previous research has shown robust cross-language lexical priming but whether affixes in two languages share representations is under debate. The current study tests within- and cross-language prefix priming for early and late English (L1) -Spanish (L2) bilinguals across four masked priming experiments (SOA=50 ms). In each experiment, primes and targets were related or unrelated in Identity, Prefix, Orthographic, and Semantic overlap conditions. Experiment 1 (L1-L1, N=69) confirmed robust prefix priming effects in one's dominant language ($B=0.04$, $p=0.008$) in contrast to unreliable form and semantic priming effects ($p > 0.380$). In Experiments 2 (L1-L2, N=75), 3 (L2-L1, N=66) and 4 (L2-L2, N=74), early bilinguals (AOA < 5) showed robust prefix priming effects in L1-L2 direction ($B=-0.05$, $p=0.019$) but not in L2-L1 direction ($B=-0.03$, $p=0.153$). The effects were also statistically reliable in L2-L2 direction ($B=-0.05$, $p=0.039$) but were not dissociable from Orthographic or Semantic priming effects. Late bilinguals (AOA > 10; matched proficiency) showed L2-L1 Prefix priming ($B=-0.03$, $p=0.038$) but also Orthographic priming ($B=-0.03$, $p=0.039$), and no L2-L2 Prefix priming effects ($B=-0.01$, $p=0.770$). The results suggest that early bilinguals map L2 prefixes onto those from L1 that have the same form and meaning.

What can Markov-switching models of pupil dilation and EEG time courses reveal about the cognitive events in word recognition?

Joshua Krause¹, Jelmer P Borst¹ & Jacolien van Rij¹

¹Bernoulli Institute, University of Groningen

Because of their high temporal resolution ERPs are often used to investigate word processing. The pupil dilation time course is assumed to instead be an indirect and delayed reflection of the latent cognitive events involved in word processing. This raises the question whether, despite these temporal differences, the same events leave a trace in both signals. Alternatively, these signals may carry information about different events in word processing. Various deconvolution approaches have been proposed to determine which cognitive events triggered the pupil response. However, the conventional approach, applied to averaged pupil dilation time courses, neglects trial and event-level variability in the timing between events and the pupil response. Recently, Hidden semi-Markov models (HsMMs) have been used to recover latent events directly from trial-level EEG recordings, permitting an investigation into the influence of trial-level predictors (e.g., continuous word frequency) on the events. We will present a novel unified method, which combines generalized additive models and HsMMs. This allows us to estimate cognitive events from co-registered trial-level EEG and pupil dilation time-courses, recorded during a lexical decision (LD) task. This new method reveals how changes in Google frequency have a different effect on every cognitive event involved in LDs.

Is lexical competition in spoken-word recognition sensitive to dialect membership? Evidence from mouse tracking

Alissa Melinger¹ & Anuenue Baker-Kukona²

¹University of Dundee

²University of Greenwich

Between-language lexical competition implicate parallel activation of a bilingual's two lexica during spoken word recognition (Marian & Spivey, 2003) but are sensitive to phonetic differences between the languages (Ju & Luce, 2004; Weber & Cutler, 2004). Investigations into bi-dialectal lexical processing have shown that the speaker accent influences which meaning of a homophonous cross-dialectal words a listener will access (e.g., bonnet, referring to clothing or a car part in American or British varieties, respectively; Cai et al., 2017). In the present study, we ask whether the mismatch between a speaker's accent and a dialect-specific lexical item modulates lexical competition effects in a mouse-tracking study. Participants saw two-image arrays while hearing instructions to click on depicted targets. Arrays included British (tortilla-torch) or American (flag-flashlight) phonological competitors, or non-competitors (tortilla/flag-giraffe). An American (Exp.1) or British (Exp.2) speaker produced each instruction. If lexical competition effects are modulated by speaker accent, we expect reduced competition when speaker's accent mismatches competitor dialect (e.g., reduced flag-flashlight competition when hearing a British speaker). While mouse trajectories were more attracted to competitors than non-competitors, this competition was not modulated by competitor dialect or speaker accent, suggesting different cross-dialectal vs. between-language competition effects.

**Analysis and Processing of Low-Frequency complex words: the case of
Portuguese blends**

Alina Villalva^{1 2 3}, Rafael Minussi^{4 5 3}, José Ferrari^{6 7} & Gustavo Estivalet^{6 7}

¹ Faculdade de Letras da Universidade de Lisboa

² Centro de Linguística da Universidade de Lisboa

³ The Word Lab

⁴ Universidade Federal de São Paulo

⁵ LabLinc

⁶ Universidade Federal da Paraíba (João Pessoa)

⁷ LAPROL

Low frequency complex words, like blends, are particularly interesting for research on word processing because they are obviously not lexicalised. We have gathered a corpus of 450 Portuguese blends, which we have thoroughly annotated, including their structural types (constituent structure – clip or word; relationship between constituents – coordination, head final modification or head initial modification, and prosodic structure that may replicate the structure of the first base word, the second base word, both, or none). The numerical analysis of the corpus revealed that not all structural combinations are equally represented. In fact, most blends belong to structural classes where the truncated constituent is the head. This apparently counter-intuitive finding was then supported by experimental results. Blends with high recognition indices in offline word association tests, as well as the lowest mean reaction time in online tests are those in which the nucleus of the blend is a clip from the base that also coincides with the prosodic pattern of the blend. In sum, our research suggests that speakers can establish strong hypotheses of lexical matching from clipped base words, and, conversely, the full presence of the base words makes blend processing a more difficult task.

Carrot or parrot? An eye-tracking study on spoken word recognition in a language attrition context

Concepción Soto ¹

¹University of Essex

Despite the existing literature on bilingual development, the understanding of lexical competition in bilinguals is limited. Previous studies have mainly focused on crosslinguistic competition, while within-language competition and the influence of diverse bilingual experiences (e.g., first-language attrition) remain largely underexamined. We investigated lexical competition in the context of language attrition, comparing the within-L1 and within-L2 competition dynamics of Spanish-English attriters (N=66) with monolingual Spanish and English speakers. Participants completed two visual world tasks with manipulation of onset/rhyme overlap in a noisy context, while their eye movements were monitored in real-time via eye-tracking. This method allowed us to explore the time-course of spoken word recognition (SWR) and transient effects of lexical competition. Results revealed a contrast between the competition mechanisms exhibited by the L1 monolinguals and the Spanish attriters when disambiguating auditory input during L1 SWR. While the Spanish monolinguals retained the information from the rhyme competitor for longer, the Spanish attriters behaved similarly to the English monolingual group by suppressing the rhyme competitor earlier in the disambiguation process. Our findings suggest that the bilinguals' competition dynamics are modulated by their bilingual experience (e.g., language attrition), contributing to a better understanding of how SWR takes place in the bilingual development spectrum.

A Verb Sense and its Frame Semantics Representation

Hristina Kukova ¹

¹Department of Computational Linguistics, Institute for Bulgarian Language, Bulgarian Academy of Sciences

The research focuses on verbs in Bulgarian language and their conceptual descriptions. The general objective of this report is to give an overview of both theoretical and empirical observations. BulFrame web-based system developed at the DCL – BAS has been used for creating and editing the conceptual frames. We consider a conceptual frame of a verb sense a unique set of syntagmatic relations between a verb literal from BulNet and noun synsets, which can occupy its frame-element positions. Building on what is known about the verb sense from WordNet and the syntactic and semantic restrictions it has on its frame elements from FrameNet we generate a grid of possible combinations. All verbs under study are taken in each particular sense separately and their frame elements can be an NP, PP, AdvP, AccCl, DatCl or a clausal element (S or small clause). We examine cases in which single-sensed verbs can have more than one possible conceptual representation (e.g. Contrition verbs can have an object or a clause). The remainder of the report contains a few case studies illustrating how we deal with verb semantics and the choice of possible frame-element-position occupiers.

Neural underpinnings of sentence reading in deaf, native sign language users

Justyna Kotowicz¹, Anna Banaszekiewicz², Gabriela Dziegiel-Fivet³, Karen Emmorey⁴,
Artur Marchewka² & Katarzyna Jednoróg³

¹Section for Sign Linguistics, Faculty of Polish Studies, University of Warsaw, Warsaw, Poland

²Laboratory of Brain Imaging, Nencki Institute of Experimental Biology, Polish Academy of Sciences,
Warsaw, Poland

³Laboratory of Language Neurobiology, Nencki Institute of Experimental Biology, Polish Academy of
Sciences, Warsaw, Poland

⁴Laboratory for Language and Cognitive Neuroscience, San Diego State University, San Diego, USA

Deaf, native signers who use sign language on a daily basis have different language and sensory experience from hearing individuals, hence, reading processes are not the same in those two groups. Previously, the neuronal basis of the reading in deaf, native signers were mainly investigated at the word level and still relatively little is known about neural underpinnings of reading at the sentence level. This research used functional magnetic resonance imaging (fMRI) to investigate brain activity while performing a sentence reading task (Semantic Judgment Task) in deaf, native signers and hearing adults. Similar activation in both groups were observed in the typical left perisylvian reading network areas: the left middle temporal gyrus (MTG) and the left inferior frontal gyrus (IFG). However, differences were also found: increased activity in left occipitotemporal and right frontal and temporal regions in deaf, relative to hearing readers. Functional connectivity analysis revealed enhanced coupling between the left IFG and the left MTG in hearing but not in deaf group. The analysis of lateralization indices showed more left-lateralized reading-related activation in the STG in the deaf readers. In conclusion, these research showed shared and distinct patterns in brain activity in deaf and hearing when reading sentences.

Wolf-hound vs. sled-dog: ERP evidence reveals that semantic constituent properties are accessed during compound recognition

Anna Czymionka¹, Mariya Kharaman¹ & Carsten Eulitz¹

¹University of Konstanz

Animacy is an intrinsic semantic property of words referring to living things. A long research tradition shows that words with animate referents have lower word recognition costs than words with inanimate referents, leading a.o. to attenuated N400 amplitudes for animate relative to inanimate objects. We use this animacy effect to monitor access to semantic constituent properties in German noun-noun compounds (always right-headed). While morphological decomposition of noun-noun compounds is supported by the robust influence of lexical constituent properties (e.g., length, frequency), literature findings for semantic decomposition are less straightforward, and depend on indirect semantic properties (e.g. contribution to meaning in semantically transparent / opaque compounds). In our fully-crossed 2x2-design, we manipulate lexical accessibility of modifiers and heads purely via animacy, i.e. an intrinsic semantic constituent property. (For illustration: animate-animate Wolfshund `wolf-hound`, inanimate-animate Schlittenhund `sled-dog`, animate-inanimate Pferdedecke `horse-rug`, inanimate-inanimate Tischdecke `table-cloth`; 40 per condition, frequency-, familiarity- and transparency-matched.) Our findings reveal statistically significant additive effects of constituent animacy on N400 amplitude (350-450 ms), with more animate constituents leading to gradually attenuated N400 amplitudes. We discuss the implications of our findings for current models of complex word recognition, possible applications in other languages and related research questions on semantic processing in compounds.

Uncovering the Neural Mechanisms of Verbal Repetition: An ALE Analysis of Neuroimaging Studies Investigating Repetition of Words and Pseudowords

Ariane Hohl^{1 2}, Marcelo L. Berthier^{1 3}, María José Torres-Prioris^{1 2 3 4} & Diana López-Barroso^{1 2 3}

¹ Cognitive Neurology and Aphasia Unit, Centro de Investigaciones Médico-Sanitarias (CIMES), University of Malaga (UMA), Malaga, Spain

² Department of Psychobiology and Methodology of Behavioural Sciences, Faculty of Psychology, University of Malaga (UMA), Malaga, Spain

³ Instituto de Investigación Biomédica de Málaga – IBIMA, Malaga, Spain

⁴ Wellcome Centre for Human Neuroimaging. University College London (UCL), London, England

Verbal repetition is a seemingly simple task but to be able to repeat a verbal sequence successfully, various complex subprocesses are needed. Moreover, repetition is crucial for several more elaborate linguistic functions, such as language acquisition and language recovery after stroke. Nonetheless, the implicated brain areas are still poorly understood, though the repetition of known and unknown stimuli seems to rely on different processing routes. With the objective of investigating the neural correlates of verbal repetition, while accounting for these differences and the implication of both brain hemispheres, we conducted a meta-analysis of functional neuroimaging studies with an activation likelihood estimation (ALE) approach. This analysis included 23 articles with 25 experiments, with which we conducted three different ALEs tapping general repetition, word repetition and pseudoword repetition. All processes engaged perisylvian areas in the left hemisphere. Yet a contrast analysis revealed that pseudoword repetition was associated with greater activation in the temporal and premotor areas compared to word repetition, whereas word repetition engaged greater activation in the left medial frontal cortex and right temporal areas. The results obtained from this first meta-analysis regarding consistent activation patterns for verbal repetition can be integrated into linguistic processing models.

How bilingualism influences language processing in the developing brain: a neurobiological perspective

Chih Yeh^{1,3}, Caroline F. Rowland^{1,2} & Sergio Miguel Pereira Soares¹

¹ Max Planck Institute for Psycholinguistics, Nijmegen, Netherlands

² Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, Netherlands

³ Max Planck School of Cognition, Leipzig, Germany

Accumulated findings have illustrated how bilingualism sculpts the developing brain and have revealed the neural correlates and behavioral milestones during bilingual development. These findings have tackled some of the questions about bilingual language development in the brain. Yet, a holistic understanding of how bilingualism influences language processing and induces neurobiological changes in children is still lacking. In this review study, we scrutinize developmental (neural) trajectories of early and late bilingual children, based on 99 peer-reviewed articles. For early bilingual children, the amount of exposure is vital to their language development. They are slower in acquiring phoneme inventories in each language compared to monolinguals. They also recruit bilateral and executive function-related brain regions and rely more on attention and pragmatic cues during language processing. Late bilingual children's acquisition, on the other hand, reproduces similar developmental stages as for their L1 acquisition. As L2 proficiency increases, they elicit more native-like ERP effects, have more responses in the language-related brain regions, and thinner cortices in the language-related areas. Eventually, the L2-induced brain responses are left-lateralized and converge with the L1 brain networks. Our study reviews the neural evidence to date and provides a comprehensive overview of neurobiological changes in developing bilingual brains.

Children's neural stimulus tracking in face-to-face and online video communication

Fatih Sivridag¹, Mariella Paul¹ & Nivedita Mani¹

¹University of Göttingen

Numerous studies have shown that there is a correlation between the physical qualities of an auditory stimulus and the neural response of a brain listening to it. This correlation has been observed in several different listening conditions with different populations. However, there has not been much research on whether there are qualitative and quantitative differences in stimulus tracking between face-to-face and online video communication in children, whose use of online video communication has increased significantly in recent years. To address this gap in the literature, we collected electroencephalogram (EEG) recordings from 30 5-year-old children while they listened to children's stories read aloud by an adult storyteller either face-to-face or via live video in a within-subject design. We used multivariate temporal response function to compare children's neural stimulus tracking in both media of communication. In our preliminary analyses we have observed that stimulus tracking appears in both types of communication. The preliminary results also hint that highest level of stimulus tracking emerges with a larger time delay in video condition compared to face-to-face communication.

Predictive audiovisual speech processing with and without mouth cues in cochlear implant users

Simone Gastaldon^{1 2}, Noemi Bonfiglio¹, Francesco Vespignani^{1 3}, Flavia Gheller^{1 3}, Davide Brotto⁴, Davide Bottari⁵, Patrizia Trevisi^{4 2 3}, Alessandro Martini³ & Francesca Peressotti¹
2 3

¹Dipartimento di Psicologia dello Sviluppo e della Socializzazione (DPSS), University of Padova, Padova, Italy

²Padova Neuroscience Center (PNC), University of Padova, Padova, Italy

³Centro Interdipartimentale di Ricerca

⁴Dipartimento di Neuroscienze (DNS), UOC Otorinolaringoiatria, Padova, Italy

⁵Scuola IMT Alti Studi Lucca, Lucca, Italy

Seeing our interlocutor's mouth helps us understand speech when the signal is suboptimal (i.e., speech-in-noise). Similar challenges are faced by deaf people with cochlear implant (CI users), whose sensory input is less detailed compared to that of normal hearing (NH) people. In an exploratory electroencephalography study, CI users and NH people were presented with audio-video recordings of a speaker uttering sentences. Mouth visibility during sentence prefix presentation was manipulated (visible vs covered). Target word predictability was determined by the preceding sentential constraint (high vs low). In preliminary target-locked ERP analyses on 14 CI users, the N400 effect was reduced when the mouth was covered relative to when the mouth was visible, in particular when looking at pre-verbal CI users. The findings will be better elucidated by the analysis of age-matched NH people and additional CI users (in progress). These preliminary results show that not seeing the mouth of the speaker during a sentential context (therefore when processing the information that allows to generate predictions) seems to affect prediction in CI users. Future analyses will also focus on pre-target alpha-beta oscillatory activity to understand how predictive processes are deployed.

Compensation of language function in patients with diffuse low grade gliomas in the left hemisphere evidenced by functional and structural reorganization

Lucia Manso-Ortega^{1,2}, Santiago Gil-Robles^{3,4,5}, Iñigo Pomposo^{4,5}, Garazi Bermudez^{4,5},
Manuel Carreiras^{1,2,6} & Ileana Quiñones¹

¹ BCBL, Basque Center of Cognition, Brain and Language, Donostia-San Sebastian, Spain

² University of the Basque Country (UPV-EHU), Bilbao, Spain

³ Universitary Hospital Quironsalud Madrid, Madrid, Spain

⁴ BioCruces Research Institute, Bilbao, Spain

⁵ Universitary Hospital Cruces, Bilbao, Spain

⁶ IKERBASQUE. Basque Foundation for Science, Bilbao, Spain

Diffuse low-grade gliomas (DLGG) within the left hemisphere can significantly disrupt language functions. Emerging research suggests that the brain may have the ability to compensate for some of the loss of language function through neural plasticity. However, there is a lack of longitudinal studies exploring the lateralization of language function including functional and structural measures in the same sample of patients. This study aims to fill this gap by investigating structural and functional plastic changes before and after surgery in 18 patients with left DLGGs. To assess changes in structural plasticity, we will measure grey matter volume changes using high-resolution MRI T1-weighted images. For functional changes, we will evaluate lateralization patterns during a picture naming task (objects and verbs). We will focus on the three main clusters of regions involved in language processing: frontal, temporal and parietal. We expect to observe reorganization of language functions through a higher lateralization pattern of language functions to the right hemisphere. These functional changes will likely be supported by changes in grey matter volume with more volume in perilesional and contralesional brain areas. These results will provide valuable insights into the compensatory mechanisms for language impairment in patients with left DLGGs.

Electrophysiological Correlates of Minimal Phrasal Composition in Comprehension

Serge Minor¹, Anna Kamenetski¹, Natalia Mitrofanova¹, Charlotte Sant¹, Myrte Vos¹ & Gillian Ramchand¹

¹UiT The Arctic University of Norway

We report on the results of an EEG study of semantic composition in comprehension. A host of MEG studies over the past decade have targeted semantic composition in minimal contexts, comparing simple Adj+Noun combinations ('red car') with minimally contrasting pairs involving a nonsense first element ('xvdg car', see Pylkkänen 2020 for an overview). These studies have consistently implicated the LATL in early time windows in the composition task (200-250ms after second word onset). EEG results have been less consistent. Neufeld et al. (2016) found an early effect of composition on ERPs using a similar paradigm to Bemis & Pylkkänen (2011). In contrast, Flo et al. (2020) found no significant effect when controlling for expectancy. The current study further tests the effect of minimal semantic composition on ERPs in a comprehension task. In addition to contrasting Adj+Noun composition with non-composition, we attempt to replicate the result of del Prato & Pylkkänen (2014) who found a distinction between Numeral+Noun and Adj+Noun composition in production. To our knowledge this effect has not yet been systematically tested in comprehension. Data gathering for this study is ongoing (24 out of planned 30 participants tested) and will be completed by the time of the conference.

Do aging and language dominance affect the egocentric bias?

Dorit Segal¹ & Gitit Kavé¹

¹The Open University of Israel

Our own knowledge often biases our ability to judge what other people know. The current study aimed to examine the effects of aging and language dominance on the egocentric bias. We sampled 72 younger (aged 19-39), 82 middle-aged (aged 40-59), and 83 older (aged 60-80) Russian-Hebrew bilinguals. Participants read short and ambiguous text message correspondence between two people and judged whether the recipient would interpret the message as sincere or sarcastic. Half of the texts contained information that suggested that the message was sincere, and half the texts contained information that implied that the message was sarcastic. The information that implied sincerity or sarcasm was available to the reader but not to the described recipient. Half of the texts were in Hebrew and half were in Russian. In both languages, older adults judged the recipient's interpretation as more sincere or as more sarcastic than did younger adults, based on their own privileged knowledge. The findings suggest that younger adults are better than are older adults at inhibiting their own knowledge. Language did not moderate the age effect, most likely because participants were similarly proficient in both Russian and Hebrew.

The Time-Course of Locality/Structure Constraints and Animacy/Gender Constraints on Anaphor Resolution of Mandarin Ziji and Ta-ziji

Yi-ching Su ¹, Ming-Lei Chen ¹ & Antonella Sorace ²

¹National Tsing Hua University, Taiwan

²the University of Edinburgh

Mandarin reflexive *ziji* plays both the roles of anaphor and logophor since it allows non-local antecedents, whereas the compound reflexive *ta-ziji* is considered as similar to English *himself/herself* and takes mainly the local antecedents. Both *ziji* and *ta-ziji* can have antecedents that do not c-command them. Moreover, the antecedents for *ziji* need to be animate and *ta-ziji* distinguishes gender in written forms. This study reports findings from four eye-tracking experiments examining the effects of locality and structure constraints, manipulating the (mis)matching of animacy (for *ziji*) and gender (for *ta-ziji*). The two experiments on the locality constraint found that when both NPs c-commanded the reflexives, there were main effects from the local NPs during early stages of processing for both *ziji* and *ta-ziji* at the critical region, with the effect from the non-local NPs emerging only at later stages of processing for *ta-ziji*. The two experiments on the structure constraint showed no effects from the local non-c-commanding NP, and there were main effects from the non-local c-commanding NP at the pre-critical (verb) region during early stages of processing for *ziji* (manipulating animacy), and the effects emerged only at the later stages for *ta-ziji* (manipulating gender).

**Visual Event Representations Facilitate the Processing of Grammatical Case
by Russian-German Bilingual Children**

Serge Minor¹, Natalia Mitrofanova¹ & Marit Westergaard^{1 2}

¹UiT The Arctic University of Norway

²NTNU Norwegian University of Science and Technology

We employed VW eye-tracking to investigate whether the visual representation of events (as compared to individual objects) would facilitate the processing of grammatical case by Russian-German bilingual children (N=49, 8-13 y.o.). The participants heard transitive sentences in Russian while observing a visual display. We combined two manipulations. First, following Kamide et al. (2003), sentences were presented with either SVO or OVS word order, with the first NP (NP1) marked with Nominative or Accusative case ('Rabbit-NOM will eat cabbage-ACC' vs 'Rabbit-ACC will eat fox-NOM'). Second, the visual display contrasted either: a) individual objects – a plausible theme and agent of the action (CABBAGE vs FOX); b) pairs of pictures combining the theme/agent with the NP1 referent (CABBAGE+RABBIT vs FOX+RABBIT); or c) event pictures representing the NP1 referent interacting with the theme/agent (A RABBIT EATING A CABBAGE vs A FOX EATING A RABBIT). We analyzed looks to the picture involving the agent prior to NP2 onset as predicted by the interaction between NP1 case and type of visual display. We found that the participants were significantly more sensitive to the case manipulation when they viewed event pictures, suggesting that event representations facilitated the processing of thematic role information signalled by grammatical case.

Agreement with conjoined subjects involving mismatching person features

Eva Neu¹ & Brian Dillon¹

¹University of Massachusetts Amherst

Conjoined subjects with mismatching person features often give rise to variable verb agreement. A key question such cases raise is whether this is due to different speakers adopting different agreement strategies, or to individual speakers producing multiple outputs. In this experimental study, we investigate a variable agreement pattern in German. A verb agreeing with a second and a third person DP can surface both with second and with third person plural features: *Du und dein Bruder habt / haben den Film schon gesehen.* You.SG and your brother have.2PL / have.3PL the movie already seen 'You and your brother have already seen the movie.' We conducted an acceptability judgment task (n=78) with a 5-point Likert scale. The two factors in our Latin Square design were a) verbal agreement, and b) order of conjuncts to test for closest conjunct effects. Using a Bayesian mixed-effects ordinal regression model, we found that both variants were judged equally acceptable (mean = approx. 4) regardless of order of conjuncts. Crucially, test-retest reliability of individual differences was extremely high (0.92, 95% CI 0.75–0.99). We conclude that the variable agreement is due to inter-subject variation but that interestingly, speakers find the alternative form moderately acceptable as well.

**The time course of processing anti-local anaphors in Telugu supports the
Local Search Hypothesis**

Vishal Arvindam¹ & Matt Wagers¹

¹University of California, Santa Cruz

The processing of long-distance anaphors (e.g., Mandarin ‘ziji’) often exhibits an online locality bias, where comprehenders initially retrieve a local antecedent. To explain this behavior, the local search hypothesis (LSH) posits a specialized search mechanism that restricts anaphor retrieval to the most local domain before targeting distant domains. We present three experiments that test the LSH by examining the processing of the anti-local anaphor, ‘tanu’, in Telugu (Dravidian). ‘Tanu’ provides an ideal test case for the LSH because it exhibits a categorical anti-locality constraint: it can never be grammatically bound by a local antecedent. Previously, we’ve shown that speakers obey the anti-locality constraint offline (reference selection task) but exhibit a locality bias online (SPR): readers slow down at ‘tanu’ following a number-mismatching local antecedent. We aimed to replicate this study with tightly controlled nouns and comprehension questions and found that the locality bias at ‘tanu’ persists. Additionally, we obtained a downstream grammaticality effect: readers slowed down to number-mismatching anti-local antecedents only later at a complementizer. This constellation of effects - the offline anti-locality judgments, the early online local mismatch effect, and late grammaticality effect - supports the LSH. Even in Telugu, retrieval works against anti-local anaphora resolution, albeit temporarily.

French wh-in situ: an experimental study

Ruoxuan Li^{1,2}, Doriane Gras^{1,2} & Caterina Donati^{1,2}

¹LLF (laboratoire de linguistique formelle)

²Université Paris Cité

Formal linguistics assumes that wh-in situ questions involve a covert dependency between the wh-element and the periphery of the clause, confirmed by the few processing studies in wh-in situ languages. What about French, where wh-in situ is one of many strategies? We report the results of 2 online experiments assessing acceptability and response accuracy, using the same items in two modalities (audio-written) in a 2x2x2 design: in situ (a-b)/ex situ (c-d), subject (a, c)/object (b, d) qui/quel ('who'/'which'), involving respectively 62 and 62 French participants.

- a. [_QTopLe monsieur], [qui/quelle dame le pousse]?
- b. [_QTopLe monsieur], [il pousse qui/quelle dame]?
- c. [_{Top}Le monsieur], c'est qui/quelle dame qui [_e] le pousse?
- d. [_{Top}Le monsieur], c'est qui/quelle dame qu'il pousse [_e]?

Results of both experiments are consistent and display as expected a subject advantage (accuracy) in wh-ex situ questions, but surprisingly an object advantage (accuracy and acceptability) in wh-in situ questions. We interpret this asymmetry as indirect evidence of the presence of a wh-dependency in both conditions (blue), interacting with the topic-pronoun dependency present in all items (red): subject in situ questions and object ex situ questions involve crossing dependencies, known to be more difficult to process than nested dependencies.

Processing garden-path sentences in European Portuguese: the impact of language properties

Diana Simões¹, Paula Luegi¹, Jéssica Gomes¹ & Armanda Costa¹

¹University of Lisbon, School of Arts and Humanities, CLUL

Sentences like (1), unambiguous, and (2), ambiguous, were presented, and one of two question types was presented afterward, (a) or (b), in an eyetracking during a reading experiment (a self-paced reading task is ongoing). While the reporter photographed, the bird chirped... (2) While the reporter photographed the bird chirped... (a) Did the reporter photograph the bird? (b) Did the bird chirp in the tree? These structures were tested in different languages and showed that readers initially interpret NP2 “the bird” as the object of V1 “photographed”, although it is the subject of V2 “chirped”, forcing a (good-enough)-reanalysis process. In this study we tested these structures in EP: a null-subject and free-word-order language. To avoid coreference between NP1 and NP2 we used number or semantical information. We tested if effect of null-subject interpretation might impact the measures in NP2/V2 regions. Methods: 24 sentences (+48 fillers); 28 participants. Results, ambiguous conditions: lower accuracy in (2a); longer time in First-Pass in NP2; Total-Pass: NP2, V2; RegrOUT: NP1, NP2, V2, and FINAL-Region; RegrINTO: V1 and NP2. Discussion: results confirm the initial NP2 interpretation (and persistence) as the object of V1; good-enough theory; infirm selective reanalysis hypothesis. The null-subject/word-order effect is yet to confirm.

How do people interpret an implausible transitive sentence?

Yue Yu¹, Holly Branigan¹, Zhenguang Cai² & Martin Pickering¹

¹The University of Edinburgh

²The Chinese University of Hong Kong

Research has shown that people sometimes non-literally interpret implausible dative sentences but are less likely to do so with transitive structures. Some studies suggest that people may reconstruct the syntactic representation of implausible sentences during comprehension, while others propose that they might maintain it. To investigate the processing of implausible transitive sentences, we conducted two structural priming experiments using transitive structures. Participants first heard an active or passive sentence, either plausible or implausible, then answered a comprehension question and described a transitive-event picture. The comprehension results reveal that participants were more likely to interpret a sentence non-literally after hearing an implausible prime than a plausible prime, and interpretations did not vary because of the structure, suggesting that speakers process semantic and syntactic information simultaneously but without interaction. Priming results showed equivalent priming between implausible and plausible primes, as well as between nonliterally interpreted implausible sentences and literally interpreted implausible sentences, implying that people are more likely to maintain their initial syntactic representation of an implausible sentence rather than reconstructing the structure. The interpretation of implausible sentences varies across syntactic alternations, with people may rely more on syntactic reconstruction for implausible datives, and more on non-literal semantic interpretation for implausible transitives.

The processing cost of imprecision: A pupillometry study

Camilo R. Ronderos¹, Henriette Johansen¹ & Ingrid Lossius Falkum¹

¹University of Oslo

Absolute adjectives such as straight have been claimed to be precise in their semantics (e.g., to mean ‘perfectly straight’, Kennedy, 2007). They can, however, also be understood imprecisely in an appropriate context (e.g., to mean ‘straight enough’). Imprecise interpretations have been described as a type of lexical pragmatic adjustment (Lasersohn, 1999, Sperber & Wilson, 2011). However, it is unclear whether this adjustment necessarily results in added processing cost, or whether precise and imprecise interpretations can be derived with similar effort when embedded in a facilitating context. We conducted a pupillometry experiment in Norwegian to investigate this question. 42 participants saw 12 critical items made up of facilitating contexts together with a target spoken utterance which contained an absolute adjective such as straight. The contexts elicited either a precise or an imprecise interpretation of the adjective and had been previously normed. We measured pupil dilation as the target utterance unfolded. A linear, mixed-effects regression model of pupil dilation across time (time-locked to adjective onset) revealed that, despite contextual facilitation, imprecise interpretations resulted in significantly more pronounced pupil dilation relative to precise interpretations. Our results suggest that the encoded meaning of absolute adjectives is precise, with imprecise interpretations requiring additional processing effort.

Different fixation patterns for different adjective types in English, Hindi and Hungarian

Camilo R. Ronderos¹ & Paula Rubio Fernández^{2,1}

¹University of Oslo

²Max Planck Institute for Psycholinguistics

In their classic eye-tracking paradigm, Sedivy et al. (1999) asked participants to move objects in a display following descriptions with scalar adjectives, such as ‘the short pencil.’ Critical trials included a contrast object (e.g., a longer pencil), supporting a contrastive interpretation of the adjective, whereas control trials did not, only allowing for a descriptive interpretation. In critical trials, participants derived a contrastive inference and anticipated the noun in hearing the adjective. Later, Sedivy (2004) found contrastive effects with scalar and material adjectives, but not with color adjectives. However, Aparicio et al. (2016) and Ryskin et al. (2021) observed contrastive effects with both scalar and color adjectives. In the current study, we sought further evidence in this issue by collecting data in three languages with prenominal modification: English, Hindi and Hungarian. The results show that there was a significant difference between conditions for relative and color adjectives across languages, but not for material adjectives. This suggests that - for relative and color adjectives only - participants could settle on the target image sooner when they were able to derive a contrastive inference compared to when they were not.

The interplay of pragmatics and prosody in the interpretation of negation scope

Valentina Apresjan^{1 2}, Nikolay Mikhailov² & Natalia Slioussar^{3 4}

¹ Henan University

² Nazarbayev University

³ HSE University

⁴ St. Petersburg State University

We examine strategies of interpreting scopally ambiguous sentences in Russian such as “He didn’t like all these presents” = ‘He liked only some of the presents’ (quantifier negated) or ‘He didn’t like any of the presents’ (verb negated). We studied oral speech corpora and conducted an experiment in which participants were asked to choose among several interpretations for audially presented stimuli. We analyzed the relative importance of information structure conveyed by prosody (negated element is focused and stressed) and of general heuristics, based on the speakers’ pragmatic competence (in some sentences, one interpretation is more plausible). Corpus data indicate that speakers tend to stress negated elements in pragmatically ambiguous sentences, but have more “relaxed” stress patterns in pragmatically unambiguous sentences. Experimental results demonstrate enhanced performance for pragmatically unambiguous sentences with “matching” intonation (negated element is stressed) and somewhat, but not significantly, poorer performance for pragmatically unambiguous sentences with “wrong” intonation (another element is stressed). For pragmatically ambiguous sentences, the interpretation is decided by prosody: the stressed element is interpreted as negated. Thus, speakers rely mostly on their pre-existing pragmatic competence to interpret scope ambiguity and consistently use prosodic cues only when pragmatic knowledge is insufficient.

Why some phrases are not so attractive: the presence or absence of gender agreement attraction in different constructions

Natalia Slioussar¹

¹HSE Moscow

Agreement attraction was found in different constructions. We ask where attraction is not found, making inferences for agreement processing theories. We focus on gender agreement processing in Russian. We conducted a self-paced reading study with target sentences like (1) and (2). In both constructions, there is a dependent noun between the agreement controller and agreement target. In (1), it may disrupt agreement. What about (2)?

(1) Reč' pro moral'/etiket byla/*byl skučnoj/*skučnym s pervyx slov.

speech_{F.NOM.SG(=ACC)} about moral_{F.ACC.SG(=NOM)} / etiquette_{M.ACC.SG(=NOM)}
was_{F/*M.SG} boring_{F/*M.SG} from first words

(2) Zapisannaja/*zapisannyj v tetrad'/bloknot mysľ zanimaet moe voobrazenie.

written_{F/*M.SG} in copybook_{F.ACC.SG(=NOM)} / notepad_{M.ACC.SG(=NOM)}
thought_{F.NOM.SG(=ACC)} occupies my imagination

In (2), no attraction was observed. Two additional self-paced reading experiments confirmed the following hypothesis. When we see the agreement target in (2), we start looking for a controller with the matching gender. Other nouns with a mismatched gender distract the parser, but do not fool it: arriving at the right noun, it immediately detects the error. When an error is detected on the agreement target, as in (1), the system rechecks the agreement controller, which may lead to a retrieval failure. In (2), no rechecking takes place. This stresses the inherent asymmetry of the agreement relation.

Asymmetric processing effects of intra-sentential explanation coherence

Runyi Yao¹, Kelsey Sasaki¹, Daniel Altshuler¹ & E. Matthew Husband¹

¹Faculty of Linguistics, Philology and Phonetics, University of Oxford

Comprehenders generate offline intra-sentential explanation (backwards-causal) coherence between a resultative adjective and an instrument when the NP containing the adjective is a definite passive subject. This is arguably due to temporal interpretation constrained by topichood (e.g., *The/#A broken window was struck with a stone / #Beth struck the/a broken window with a stone* ↗ 'The window was broken because of the stone'). We investigated whether comprehenders commit to this coherence online using eyetracking-while-reading with a 2 (active/passive) x 2 (definite/indefinite) design (N=24, Items=40). Prior research finds online inter-sentential coherence effects in later eye movement measures; however, the current study finds no significant interaction (definite passive vs. other conditions) in any measure at the critical 'with a stone' region (all ps > .41). This asymmetry of offline coherence without online effects suggests that comprehenders do not incrementally establish coherence between informationally backgrounded elements, possibly because they are unable to rapidly raise a relevant question-under-discussion, which may guide online coherence effects in more standard inter-sentential cases (e.g. *The window was broken. It was struck by a stone.* ↗ 'The window was broken because of the stone'). Future research will investigate potential online effects when comprehenders are cued by a relevant QUD overtly.

An ERP Study on Cross-Cultural Humor: Taiwanese Subjects' Response to American Sarcastic Insults

Yi-Ting Yang^{1 2} & Shiao-hui Chan^{3 1}

¹National Taiwan Normal University

²Basque Center on Cognition, Brain and Language

³University of Arizona

The Event-Related Potential study explored whether the perception of sarcasm—a type of humor—would follow a well-established three-stage model of humor processing (N400: incongruity detection; P600: incongruity resolution; LPC: elaboration) and whether such perception would differ across cultures. We recruited two groups of subjects (19 English and 25 Chinese native speakers) and asked them to read 66 two-sentence sarcastic insults with a set-up sentence and a punchline (jokes vs. non-jokes) and determine whether the item was a joke by online button push and how funny it was with an offline rating. While the Taiwanese were more amused by jokes than the Americans in the offline rating, there was no cultural difference in the brain response: jokes induced a stronger positivity during 350-500 ms and 500-700 ms at the posterior sites (probably P3b) and a stronger negativity during 700-1000 ms at the anterior and left sites than non-jokes in both groups. Sarcasm perception did not follow the three-stage model, likely due to subjects having undergone context updating on the stimuli from an affirmative start to a dissenting ending, and then having shifted from a serious mode to a playful one.

An experimental study on social meanings of negative concord in English

Stephanie Rotter¹ & Mingya Liu¹

¹Humboldt-Universität zu Berlin

Sociolinguistic studies found that the use of negative concord (NC, co-occurrence of multiple negations with the semantics of one) in English can reflect the speaker's social backgrounds and/or persona during conversations. Our study is concerned with the social meaning of NC vs. negative polarity items (NPIs) in American (AE). We use a set of social meaning measures to tackle speaker perception of sentences, e.g., I didn't see nobody/anybody. Exp1. (native AE participants: N=48, data collection still ongoing; items: N=12) used one factor NEGATION (NC vs. NPI). Participants read sentences and rated nine questions about the speaker on a 7-point Likert scale. NC was associated with 1) significantly lower socioeconomic status, education, formality, coolness, friendliness, confidence, warmth, and politeness, but 2) significantly higher rebelliousness than NPI. NC has a distinct social meaning from NPI. We will conduct Exp2 manipulating the context of use (formal vs. informal) to further investigate the social meaning of the alternation in different situational-functional settings. The results of Exp1/2 will be presented.

Foreign Accent Modulates Perception and Social Evaluation of Critical Statements: Evidence from Event-Related Potentials

Marcos Domínguez Arriola ¹, Luca Bazzi ², Maël Mauchand ¹, Alice Foucart ² & Marc Pell ¹

¹McGill University, Montreal, Canada

²Universidad Nebrija, Madrid, Spain

Foreign-accented speech is highly prevalent in present-day social interactions. However, behavioral and neurocognitive evidence has shown that hearing a foreign accent influences how pragmatic meanings are evaluated. To better understand how speaker accents influence pragmatic processing, negative statements (e.g., ‘You are very lazy’) produced by native and Chinese foreign-accented English speakers were presented to 20 native listeners who rated how friendly the speaker sounds while recording their cortical brain activity using EEG. Behaviorally, participants judged critiques produced by native speakers to be less friendly than those produced by foreign-accented speakers. Event-related potentials (ERPs) evoked from sentence onset showed an increased P200 for accented vs. native utterances, suggesting early registration of the speaker’s (non)native status. When ERPs were time-locked to the final, critical word (e.g., lazy), statements produced in a foreign accent increased the early posterior negativity response (200 - 400 ms) and the posterior late positive component (600 - 900 ms) compared to native utterances. These findings suggest that processing emotive content and inferring pragmatic meaning from foreign-accented speech places differential demands on listeners. Our results imply that the social-pragmatic implications of statements produced by native vs. foreign-accented speakers are distinct both at the neurocognitive and decision-making level.

What types of situations trigger sarcasm? A language generation study.

Hyewon Jang ¹, Bettina Braun ¹ & Diego Frassinelli ¹

¹University of Konstanz

We tested two factors that potentially trigger sarcasm: relationship with interlocutor (friend or colleague) and situation. We created 40 situations where an interlocutor was 1) behaving silly, 2) not seeing their own flaws, 3) talking about uninteresting topics, 4) acting entitled and demanding, or 5) being neutral. 128 native English speakers generated sentences responding to these situations and evaluated the interlocutor being funny or annoying, and the sarcasm level of their responses. For a subset of the stimuli, they reported whether they intended to mock the interlocutor or be clever. A linear mixed-effects model showed that situation types 1-2 triggered significantly more sarcastic responses than the neutral condition (5). For situation type 4, sarcasm ratings were affected by whether the participant perceived the situation as funny (increasing sarcasm) or annoying (decreasing sarcasm). Perceiving the interlocutor as annoying, and intentions to mock the interlocutor or to be clever also triggered higher sarcasm. Perceiving the interlocutor as funny interacted with all situation types in causing higher sarcasm ratings. The interlocutor relationship did not affect sarcasm ratings, nor did it interact with the situation type. Our data shows that situation types and speaker's intentions affect sarcasm use more than relationship types.

Priming Scalar Alternatives under Negation and by Antonyms in Lexical Decision

Radim Lacina^{1,4}, Stavroula Alexandropoulou², Eszter Ronai³ & Nicole Gotzner¹

¹Osnabrück University

²Aristotle University of Thessaloniki

³Northwestern University

⁴University of Potsdam

Weak scalar words such as 'warm' give rise to scalar implicatures that amount to the negation of the stronger term, i.e. 'warm but not hot'. The notion of informationally stronger alternatives has played a crucial role in investigating this phenomenon, yet researchers disagree about whether other alternatives also play a role. Recently, Ronai and Xiang (2023) found evidence for the activation of the stronger term during online implicature derivation. We ran three lexical decision experiments aiming to see if even informationally weaker alternatives are activated by comprehenders. We did this by introducing negation and antonymity. We present a joint analysis of our three experiments (negated weak scalars, antonyms, and negated antonyms) together with Exp 2 (weak scalars) from Ronai and Xiang (2023). Our results show that while negation managed to diffuse priming as predicted, antonyms were shown to be primed when not negated. This pattern is most compatible with the Alternative Activation Account (Gotzner, 2017), where relevant alternatives are expected to be primed, but grammatical and contextual factors such as negation can constrain alternative generation and selection. Our results highlight the potential of lexical priming to answer questions related to the generation and restriction of alternatives in implicature processing.

Does Priming Prosodic Phrasing Modulate Reading Times?

Dorotea Bevivino ¹, Giuseppina Turco ¹ & Barbara Hemforth ¹

¹ Université Paris Cité, LLF, CNRS

Prosody plays a crucial role in language processing. However, it remains unclear which cue drives this effect and to what extent it is simply due to expected syntax. This study aims to investigate the role of prosodic phrasing in modulating language processing, beyond syntactic structure. Exploiting French highly regular prosodic structure, we test for priming effects of prosodic phrasing in the processing of unambiguous sentences with well-defined prosody. This is assessed by measuring reading times during an audio-primed acceptability judgment task. Unambiguous sentences containing French minimal prosodic units serve as targets; audio-primers consist of number series manipulated to either present a cooperative (expected in targets) or conflicting prosodic phrasing. Reading times at silent reading before rating are measured as index of cognitive load at language processing in response to primed prosodic phrasing. Our hypothesis is that primed prosody modulates reading times. Sentences primed with conflicting prosody are expected to show increased reading times than sentences primed with cooperative prosody, pointing at a greater cognitive load in language processing, triggered by interference effects of primed conflicting prosody. Data collection is currently in progress. If our predictions are met, it would suggest that prosodic phrasing may modulate language processing beyond syntactic structure.

Prosody Disambiguates String-Identical Connected Clauses and Relative Clauses

Buhan Guo^{1,2}, Nino Grillo¹, Sven Mattys², Andrea Santi³, Shayne Sloggett¹ & Giuseppina Turco⁴

¹Department of Language and Linguistic Science, University of York

²Department of Psychology, University of York

³Department of Linguistics, University College London

⁴CNRS-Université Paris 7 Paris Diderot

We investigated whether prosody disambiguates Clefts containing string identical Connected Clauses (CC, 1) and Relative Clauses (RC, 2) in English. RCs in (2) are nested within the element they modify and in focus. CCs (1) carry given information and attach higher in the structure. -Who was laughing? -It was [the editor] [CC that was laughing] -Who called? -It was [the editor [RC that was laughing]] ([CC that called]) Exp1: A Planned Production (N=8) study revealed clear tonal and durational differences at multiple regions. Exp2: To test whether these prosodic cues disambiguate the two readings, 64 participants judged the acceptability of auditorily presented sentences in response to preceding contexts and questions which elicited either a CC or RC reading. The prosody of the target sentences either matched or mismatched the context, leading to a 2(Context: CC vs. RC)*2(Prosody: Match vs. Mismatch) design. Matched prosody was accepted more often (85%) than mismatched prosody (59%; $p < .01$), indicating listeners' sensitivity to the prosodic differences between the two structures. This effect was smaller for CC structures than for RC ones ($p < .01$), which suggests that prosodic disambiguation is more important for nested RCs than for non-nested CC structures.

Dowty was right: eye-tracking experienter among agents and themes

Marta Sánchez-López¹, Mikel Santesteban¹ & Itziar Laka¹

¹ University of the Basque Country (UPV/EHU)

There is ample psycholinguistic evidence for agent and patient thematic roles as core knowledge categories, but evidence for other roles is scarce (Rissman & Majid, 2019). Jackendoff (1983) proposed a large list of independent roles. Dowty (1991) argued there are only two proto-roles Agent and Patient, the argument with most Agent entailments becomes subject. We present evidence in favor of Dowty's approach, looking at experienter role processing. Following proto-roles approach, experienter has the Agent entailment of sentience, hence it becomes subject only when there are no other arguments with more Agent entailments. In Jackendoff's approach experienter, agent and patient are distinct linguistic categories. Dowty's approach predicts that Agent-Experienter structures will involve larger processing load than Agent-Theme, whereas Jackendoff's approach predicts no differences. Experiment. Eye-tracking reading task. 48 Spanish natives. 40 experimental sentences in four conditions: Experienter-Theme (psych and perceptual verbs), Agent-Experienter and Agent-Theme structures. Participants' Total Duration fixations were larger on Agent-Experienter than on Agent-Theme structures at verb region ($p=.004$). Agent-Experienter has two arguments with Agent entailments, increasing processing load. Results provide psycholinguistic evidence in favor of proto-roles approach.

Different languages do not prevent joint memory

Alper Demircan¹, Natalie Sebanz¹ & Eva Wittenberg¹

¹Central European University, Vienna

Sociolinguistics has often claimed that speaking different languages leads to intergroup distance. Here we use a paradigm from joint action research (Elekes & Sebanz, 2020) to test this claim: when acting together, people remember not only their own, but also their partner's contribution towards reaching a common goal ('Joint Memory Effect'). In two preregistered studies (N=16 pairs each), we ask whether speaking different languages would suppress this effect due to intergroup distance. In Exp.1, two partners had to respond to pictures from one of three categories, leaving one unassigned (animals/plants/objects) and afterwards recall as many items as possible (DV: number of recalled items/category). Exp.2 was conducted with native speakers of different languages: Participants performed the same task but, this time, instructions were provided in each participant's native language, which the other partner did not understand. Preliminary data show successful replications of the Joint Memory Effect in both experiments: Participants remembered their category best, but the partner's better than the unassigned category. However, there was no evidence for a decreased Joint Memory Effect in Exp.2, which would have indicated increased intergroup distance due to linguistic differences. This suggests that not in all circumstances, speaking different languages leads to intergroup distance.

Investigating the role of masculine generics: A large-scale replication and extension in Czech

Mikuláš Preininger¹, James Brand¹, Markéta Ceháková¹, Adam Kříž¹ & Jan Chromý^{1,2}

¹Charles University

²University of Tübingen

Many roles nouns carry with them gender stereotype biases, such as beauticians being associated more with females and builders more with males. For languages with grammatical gender, an individual or a group of individuals can often be referred to using a masculine form (i.e. generic masculine), e.g. in Czech - kosmetici [beauticians]. Previous work (Gygax et al., 2008; Sato et al., 2013) has claimed that there are differences in the processing of gender information when comparing languages with and without grammatical gender, whereby masculine generics are more likely to lead to a male-dominant interpretation, even when referring to stereotypically female role nouns. We re-examine this work through a large-scale replication with L1Czech (exp.1, n=242) and L1Czech-L2English participants (exp.2, n=159), using the same sensibility judgement paradigm. Our results were comparable to those reported in Gygax et al. (2008) and Sato et al. (2013), however we discuss some fundamental issues with the paradigm and stimuli used in the experiments based on follow-up questions targeting participants' understanding of the instructions and task. To address these concerns, we plan to run 3 follow-up studies that will provide more empirical clarity on these effects and the underlying mechanisms driving them.

The aboutness hypothesis: a new way to explain relative clause processing

Céline Pozniak¹ & Barbara Hemforth²

¹ Université Paris 8 - SFL

² CNRS-Université Paris Cité

Subject and object relative clause processing has been explained by a combination of syntactic, semantic, and pragmatic factors. We suggest that many of the phenomena (e.g. general subject preference, effects of animacy, discourse status of RC internal subjects) can be explained by a general principle, the Aboutness Hypothesis: a RC is most acceptable and easiest to process when everything contributes to making the head its optimal aboutness topic. This principle makes predictions for the role of implicit causality verbs which make subjects or objects good candidates for aboutness topics, a bias which may conflict with the role of the head. In Experiment 1, we find in acceptability judgments that object RCs with subject-biased verbs are the least acceptable and that object RCs with object-biased verbs can be as acceptable as subject RCs in French. We show in Experiments 2 & 3 that implicit causality influences RC acceptability independent of syntactic factors such as intervention effects as well as semantics factors such as thematic roles. Experiment 4 replicates the results found in acceptability judgements through self paced reading tasks (though in question answering times only). These results confirm the Aboutness Hypothesis as a new way to explain RC processing.

Quantification, Negation and Set formation

Eva Klingvall ¹ & Fredrik Heintz ²

¹Lund University, Sweden

²Linnaeus University, Sweden

In this talk we explore the differences in processing of quantified, non-quantified, negated and non-negated expressions in Swedish. Previous research has shown that negated statements are more difficult to process than their non-negated correspondences. We investigate this issue by comparing the processing of negated quantified expressions (e.g. Not quite all the pensioners went jogging...) to positive quantified expressions (e.g. Almost all the pensioners/Five of the pensioners went jogging...) and referential expressions (The pensioners went jogging...). Using ERPs, we examine at what point in the sentence differences arise. Negative quantified expressions are also known to involve a referential shift from the reference set (those who went jogging above) to the complement set (those who didn't go jogging). This shift leads to a temporary referential ambiguity detectably in processing. We again investigate at what point this referential shift appears. We also compare the quantified conditions to the referential condition to see when quantification takes place in processing. The results show that quantification of the quantifier's restriction (pensioners above) and the referential shift happen very early on in processing. In the talk we discuss the implications this has for theories of semantic processing and for theories of semantics.

Bimodal bilingualism and executive function in hearing children, native signers

Justyna Kotowicz ¹, Gary Morgan ² & Bencie Woll ³

¹Section for Sign Linguistics, University of Warsaw, Poland

²City, University of London, UK

³University College London, UK

Bimodal bilingualism – in a sign language an spoken language – provides a unique opportunity to examine the cognitive effect of using two highly different languages with two distinct perceptual and motor systems. This study is the first looking on executive function in bimodal bilinguals, hearing children, native signers who are growing up in deaf families in the UK. The EF level of bimodal bilingual children was compared to unimodal bilinguals and monolinguals. Three groups of children did not differ significantly on working memory skills and cognitive flexibility, whereas different pattern of conflict resolution was observed in bimodal bilinguals when compared to monolingual children. Present study suggests a potential effect of bimodal bilingualism on conflict resolution capacity. It is also possible that visual-spatial language experience modifies the conflict resolution skills in bimodal bilingual children. This study is one of the first to provide evidence for possible positive role of bimodal bilingualism on cognitive control in children.

Deafness, bilingualism, and The Big 3: How do length, frequency, and predictability support efficient reading in deaf native signers?

Frances Cooley¹ & Elizabeth Schotter¹

¹University of South Florida

Deaf native signers who are skilled readers are more efficient than hearing readers, posing an interesting challenge to current models of bilingual reading. Though they engage in two distinct languages like bilinguals, they process text in one language like monolinguals. We investigated how word characteristics support deaf readers' efficiency by comparing the eye-movements of 27 deaf native signers and 27 matched hearing monolinguals reading 200 sentences with embedded target words manipulated for length, frequency, and predictability. Although L2 readers usually demonstrate smaller length effects compared to monolinguals, deaf signers demonstrated larger length effects by fixating much less on short than long words (group*length: skipping: $p < 0.001$; GD: $p < 0.001$). Like L2 readers, deaf signers had smaller predictability effects than monolinguals, receiving less benefit from contextual information (group*predictability: skipping: $p < 0.001$; GD: $p < 0.001$). Finally, while L2 readers usually have larger frequency effects, deaf and hearing readers had similar sized frequency effects and fixate more on low frequency words (group*frequency: skipping: $p = 0.18$; GD: $p = 0.19$). Results suggest that deaf signers' efficient reading is driven by enhanced sensitivity to visual information, and reinforce that they are not just deaf or bilingual.

Placing signs on the spectrum of iconicity

Anique Schüller¹ & Brendan Costello¹

¹Basque Center on Cognition, Brain and Language (BCBL)

The traditional view that the relationship between the form and meaning of a linguistic sign is arbitrary is challenged by the existence of iconicity, which is especially prevalent in signed languages. Iconicity can be a matter of degree or type. To measure this, we collected iconicity ratings for 600 lexical signs of Spanish Sign Language (LSE) from deaf signers on a 1-7 scale. To categorize type of iconicity, we selected two classification systems: one based on Taub's (2001) model, in which iconicity involves performing an action (e.g. handling an object) or exploiting some perceptual property of the referent (e.g. its shape), with further degrees of abstraction; the second, included in the LSE-Sign lexical database, categorizes iconicity according to formal properties of the sign and how they express its meaning. For each classification system we examined how the quantitative ratings distribute across categories. For example, is action-based iconicity rated as more iconic than perception-based? Additionally, the classification systems are compared to determine if one better captures how iconic signs are rated. This reveals insight into the relationship between degree and type of iconicity and the accuracy of classification systems in reflecting signers' perception of iconicity.

Iconicity affects sentence processing: Evidence for incremental language-vision interaction

Ian Rigby¹ & Elsi Kaiser¹

¹University of Southern California

Language exhibits various iconic form-meaning associations. For example, we associate kiki and bouba with sharp and round shapes respectively. However, prior research largely uses offline tasks explicitly probing metalinguistic awareness of the form-meaning relation (e.g., matching/rating/categorizing; Styles, 2017). It is not known (i) if iconicity effects occur in real-time comprehension or (ii) how robustly they occur in non-metalinguistic tasks. Our two self-paced reading experiments (a non-metalinguistic task) provide the first evidence for incremental effects of iconicity during real-time sentence processing: In Exp1, each trial first showed a person interacting with an unambiguously round or sharp shape, followed by a sentence with a nonce shape-name containing (congruent/incongruent) round- or sharp-associated graphemes (e.g. booboh, kaykee). RTs show congruence effects immediately at the shape-name (slower RTs when round-associated words refer to sharp shapes, $p's < .05$). In Exp2, scenes depicted ambiguous shapes. Sentences again used round/sharp-associated nonce words, but now introduced congruency/incongruency by means of category labels downstream ('booboh/kaykee...round/sharp things'). RTs show no differences at the shape-word or the (congruent/incongruent) shape-category word. We conclude that the language processing system rapidly responds to iconic congruence when it is conveyed by a combination of visual and linguistic information (Exp1), but not linguistic information alone (Exp2).

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