Welcome

International Conference on Multilingualism
October 24-25, 2013 | Montreal, Canada

Dear Colleagues,

Welcome to the multilingual city of Montreal, to McGill University, and to our *International Conference on Multilingualism: Linguistic Challenges and Neurocognitive Mechanisms*!

This conference started small, as one of many events organized to celebrate the 50th anniversary of McGill's School of Communication Sciences and Disorders (SCSD). We hoped to attract a number of international colleagues who shared our excitement about interdisciplinary top-notch research on multilingualism and its neurocognitive underpinnings. Following the research spirit at SCSD, one guiding principle for the conference has been to bring together scientists and professionals from different backgrounds who use very different methodology and terminology to approach the complex issues in our field. Our goal is to bridge some of the long-lasting gaps between linguists, psychologists, neuroscientists, clinicians and educators, while using a common language and promoting high standards in science. In contrast to other 'interdisciplinary' conferences on multilingualism, there won't be any parallel sessions. Moreover, speakers were asked to avoid jargon whenever possible, and to point out methodological challenges and limitations of their work. However, whether this vision would work remained unclear for a time.

When we received the 40th abstract submission, we finally knew the meeting would actually deserve the label 'conference'. After the 150th submission, we started to worry about space limitations. Although only 55% of the abstracts could be accepted, we now have more than 170 registrants from five continents (the Americas, Europe, Asia, Africa and Australia), including a considerable number of professionals. Many others had to be turned down. Without any doubt, this overwhelming response reflects on the outstanding international reputation of the eight invited speakers, as well as the high quality of oral and poster presentations. Topics will range from lexical, syntactic and morphological processing in late second (and third) language learners, to heritage languages and language attrition in immigrants, to the acquisition of sign language, to speech-language disorders in bilingual children.

On behalf of the Organizing Committee, I wish you an enjoyable conference, inspiring cross-disciplinary exchanges of ideas, and a few awesome days in this exciting city.

Karsten Steinhauer, Ph.D.
Chair, Organizing committee
Associate Professor, McGill University
Canada Research Chair in Neurocognition of Language

Half-century of excellence and service

School of Communication Sciences and Disorders, 50th anniversary

The year 2013 is an important milestone for McGill University's School of Communication Sciences and Disorders. As the "SCSD" turns 50, we have much to celebrate.

In the last half century, we have evolved from a small professional training unit with only a handful of students (and professors!) to one with almost 90 graduate and postdoctoral students and 13 full-time academic staff. We have earned a strong reputation for the high quality of our students and the professional education we provide, and have become known as a leading research unit devoted to the study of human communication and its disorders. It is exciting to contemplate what the next 50 years will bring…

The SCSD has developed a number of strengths, among which research on multilingualism—from a theoretical, psycholinguistic, and clinical perspective—and research on Human Communication Neuroscience factor prominently. This conference falls at the very intersection of these two strengths. We are proud to organize this event in recognition of our anniversary and honoured to host experts on multilingualism from around the world. We look forward to exchanging ideas with you and thank you for your participation.

We also welcome you to join us at a reception and exhibition of SCSD research after the conference, when members of our community will gather to reconnect with those who have made our School what it is today.

I wish you an enjoyable and stimulating conference.

Marc D. Pell, Ph.D.
James McGill Professor
Associate Dean and Director, School of
Communication Sciences and Disorders
Faculty of Medicine

Un demi-siècle d'excellence et de service

École des sciences de la communication humaine 50e anniversaire

L'année 2013 marque une étape importante pour l'École des sciences de la communication humaine (ESCH) de l'Université McGill. L'ESCH célèbre ses 50 ans cette année, et nous avons beaucoup de choses à fêter.

Au cours de la deuxième moitié du dernier siècle, nous sommes passés d'une petite unité de formation professionnelle n'accueillant qu'une poignée d'étudiants (et de professeurs!) à une école de près de 90 étudiants à la maitrise, au doctorat et au post-doctorat et de 13 membres du personnel académique à temps plein. Nous avons réussi à nous bâtir une solide réputation grâce à la qualité de nos étudiants et de l'enseignement professionnel supérieur que nous offrons. Nous sommes également reconnus comme étant une unité de recherche de pointe dans le domaine des sciences de la communication humaine et des troubles qui s'y rattachent. Il est donc très emballant de contempler ce que les 50 prochaines années nous réservent.

L'ESCH a développé un certain nombre de forces au fil du temps, notamment en recherche sur le multilinguisme, autant d'un point de vue théorique, psycholinguistique que clinique, mais également, de façon proéminente, en recherche sur les neurosciences de la communication humaine. Le sujet de la présente conférence se situe justement à la croisée de ces deux domaines. Nous sommes fiers d'organiser cet événement afin de souligner notre anniversaire et honorés d'y accueillir des experts sur le multilinguisme provenant des quatre coins du monde. Nous avons hâte d'échanger avec vous et nous vous remercions de votre participation.

Nous vous invitons également à vous joindre à nous après la conférence pour une réception et une exposition portant sur les travaux de recherche de l'ESCH. Ce sera l'occasion pour les membres de notre communauté de se réunir et de reprendre contact avec ceux et celles qui ont fait de notre École ce qu'elle est aujourd'hui.

Je vous souhaite une conférence à la fois stimulante et des plus agréables.

Marc D. Pell, Ph.D.
Titulaire, chaire James McGill
Vice-doyen et directeur, École des sciences
de la communication humaine
Faculté de médecine

Table of contents

Program

Wednesday, October 23th

17.30 - 20.00   **Registration and reception**
Thomson House, Basement Bar

Thursday, October 24th

8.00 - 8.30   **Registration**
Faculty Club, Foyer

8.30 - 9.00   **Welcome remarks**
Dr. Karsten Steinhauer, Chair, Organizing Committee
Dr. Marc Pell, Associate Dean & Director, School of Communication Sciences & Disorders
Dr. David Eidelman, Vice-Principal (Health Affairs) & Dean of the Faculty of Medicine
Faculty Club, Ballroom

9.00 - 9.30   **Invited talk:** Harald Clahsen (Potsdam Research Institute for Multilingualism)
Morphological processing in late bilinguals
<u>*Session chair:*</u> *Karsten Steinhauer*

9.30 - 9.50   Sarah Grey (Pennsylvania State University), Christina Sanz, Kara Morgan-Short, Michael T. Ullman
The role of language experience in the neurocognition of late-learned language: Bilingual L3A vs. monolingual L2A

9:50 - 10:10   Gunnar Jacobs (Potsdam Research Institute for Multilingualism), Kalliopi Katsika, Mark Calley, Lisa Martinek, Neiloufar Family & Shanley Allen
Cross-linguistic syntactic priming in German-English bilinguals: the role of global and surface syntactic structure

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

10:40 - 11:10   **Invited talk:** Eric Pakulak (University of Oregon)
Effects of language proficiency and socioeconomic status on the development of neural mechanisms supporting syntactic processing
<u>*Session chair:*</u>*Laura Gonnerman*

11:10 - 11:30   Tania Leal Mendez (University of Iowa), Roumyana Slabakova & Thomas Farmer
The relationship between prediction and proficiency in on-line L2 processing

11.30 - 11.50   Seth Wiener (Ohio State University) & Kiwako Ito
Bayesian learning and word recognition in bilingual speakers of tone languages

Program (Day 1 continued)

11.50 - 13.00	**Lunch break**
13:00 - 14:30	**Poster session 1** Thomson House, Ballroom
14:30 - 14:45	Poster removal and return to Faculty Club Ballroom
14:45 - 15:15	**Invited talk:** Holger Hopp (University of Mannheim) *Lexical bottlenecks in L2 grammatical processing* *Session chair:Susan Rvachew*
15:15 - 15:35	Veronica Whitford (McGill University) & Debra Titone *The effects of lexical entrenchment and cross-language activation during bilingual reading*
15:35 - 15:55	Kaitlyn Litcofsky (Pennsylvania State University) & Janet G. van Hell *A neurocognitive study of sentential codeswitching in low and high proficient bilinguals*
15:55 - 16:20	**Coffee break**
16:20 - 16:50	**Invited talk:** Elin Thordardottir (McGill University) *The effect of amount of input on simultaneous and sequential bilingual language acquisision* *Session chair: Linda Polka*
16:50 - 17:10	Elisabeth Kay-Raining Bird (Dalhousie University), Diane Pesco, Ludo Verhoeven, Kate Cain, Stefka Marinova-Todd & Julia Scherba de Valenzuela *Bilingual children with language and/or cognitive disabilities: An international study of context*
17:10 - 18:15	**Cocktail reception** Faculty Club
18:30 - 20:00	**Beatty Memorial Lecture:** Manuel Carreiras (Basque Center on Cognition, Brain and Language) *How to handle two languages in one brain: Some mysteries about bilingualism* Bronfman Building, Room 151

Program (Day 2)

Friday, October 25th

8.00 - 8.30	**Registration** Faculty Club, Foyer
8.30 - 8.40	**Announcements**
8.40 - 9.10	**Invited talk:** Sonja Kotz (University of Manchester) *Neural and temporal correlates of L2 speech and language processing: Beyond the expected* <u>Session chair:</u> *Vince Gracco*
9.10 - 9.30	Monika Molnar (Basque Center on Cognition, Brain and Language), Marcela Pena, Ileana Quinones, Martijn Baart, Cesar Caballero & Manuel Carreiras *Native speech processing is supported by different neural specialization in young monolingual and bilingual infants*
9.30 - 10.00	Jennifer Krizman (Northwestern University), Jessica Slater, Viorica Marian, Erika Skoe & Nina Kraus *Biological enhancements in speech processing depend on bilingual experience*
10.00 - 10.30	**Coffee break**
10.30 - 11.00	**Invited talk**: Sylvina Montrul (University of Illinois) *Dominance and attrition: Multilingualism and the science of learning and forgetting* <u>Session chair:</u> *Meghan Clayards*
11.00 - 11.20	Kristina Kasparian (McGill University), Francesco Vespignani & Karsten Steinhauer *When the second language takes over: ERP evidence of L1-attrition in morphosyntactic processing*
11.20 - 12.20	**Lunch break**
12.20 - 13.50	**Poster session 2** Thomson House, Ballroom
13.50 - 14.05	Poster removal and return to Faculty Club Ballroom
14:05 - 14:35	**Invited talk:** Rachel I. Mayberry (University of California San Diego) *When age of language acquisition matters: Brain language processing effects of learning a first language in adolescence* <u>Session chair:</u> *Karsten Steinhauer*
14:35 - 15:00	**Conference closing**

Program (Day 2 continued)

Post-conference SCSD anniversary events

15:30 - 16:30   **Invited address:** Christy L. Ludlow (James Madison University)
Recipient of the 2014 Distinguished Alumni Award for Research Leadership
Developing patient centered models for neurorehabilitation of voice and swallowing disorders
Faculty Club, Ballroom

16:30 - 17:00   **SCSD Distinguished Alumni Awards Ceremony**
Faculty Club, Ballroom

17.00 - 19.00   **"Open House": Poster exhibition of SCSD and CRBLM research**
Cocktail reception
Faculty Club, Foyer and Heritage Room

19.00 - 22.00   **Gala dinner (for ticket-holders only)**
Faculty Club, Ballroom

Beatty Memorial Lecture

Dr. Manuel Carreiras

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

*How to handle two languages in one brain:
Some mysteries about bilingualism*

Most people, including some scientists, believe that
our human brains developed to acquire and use one
language. However, more than half of the human
population nowadays either learn more than one
language from birth or invest quite a lot of time and effort
learning a second language.

Bilingualism is a growing phenomenon in the world as
well as an interesting case for investigating cognitive and
brain plasticity. How do babies born in multilingual
environments manage to acquire more than one
language? What are the cognitive and neuronal
implications of learning more than one language? How
does the brain negotiate between two languages?

In this talk I will discuss the consequences of early
bilingualism and second language learning on linguistic
and non-linguistic cognitive processes, on brain
activation, and brain connectivity from birth to
adulthood.

**Open to the general public
October 24th, 18.30 - 20.00
Bronfman Building, Rm 151**

Beatty Memorial Lecture Series
*In 1952, McGill received a $100,000 gift from Dr. Henry
A. Beatty in memory of his brother, Sir Edward Beatty,
who was president of the Canadian Pacific Railway
for many years, as well as Chancellor and Chair of
McGill's Board of Governors from 1920 to 1943. The
gift endowed the Beatty Memorial Lecture series, which
aims to bring the world's most respected and influential
scholars, scientists, or leaders to McGill.*

Invited speakers

Dr. Harald Clahsen

Potsdam Research
Institute on
Multilingualism
Potsdam, Germany

Morphological processing in late bilinguals

Much experimental research indicates that the morphological structure of inflected or derived words affect native language (L1) processing.

In this talk, I present results on how non-native (L2) speakers represent and process morphologically complex words. We used different kinds of experimental tasks (e.g. priming experiments, eye-movement monitoring, event-related brain potentials) to examine the processing of inflectional and derivational phenomena in L2 learners of English and German from typologically different L1 backgrounds.

I argue that the results from these experiments can only partially be accounted for in terms of factors such as cognitive resource limitations and L1 transfer, but that L1 and L2 morphological processing differ in more fundamental ways, in that the L2 processing system is less sensitive to morphological structure than the L1 processor.

Thursday, October 24th, 9.00 - 9.30
Faculty Club, Ballroom

Invited speakers (continued)

Dr. Holger Hopp

University of
Mannheim,
Germany

Lexical bottlenecks in L2 grammatical processing

In this talk, I explore the extent to which aspects of lexical representations and processing affect grammatical processing in late L2 learners. I will present data from a series of eye tracking experiments in the visual-world paradigm on grammatical gender agreement and in the reading paradigm on syntactic ambiguity resolution.

Experiment 1 shows how the nature of lexical (gender) representations affects the on-line predictive processing of grammatical gender agreement in English-German learners.

In the second experiment, I demonstrate how non-native German readers of English with lower degrees of lexical automaticity fail to compute syntactic structure in L2 reading; yet, once speed of lexical access is controlled for, robust and native-like structure-driven parsing preferences surface in adult L2ers, too.

I will highlight the role of lexical aspects on L2 grammatical performance and discuss the implications of these findings for L2 acquisition and L2 processing research.

Thursday, October 24th, 14:45 - 15:15
Faculty Club, Ballroom

Invited speakers (continued)

Dr. Sonja A. Kotz

University of
Manchester, UK
Max Planck Institute,
Leipzig, Germany

Neural and temporal correlates of L2 speech and language processing: Beyond the expected

Current work on L2 language perception and production often implies similar neural substrates for most language functions in L1 and L2, even though they may vary as a function of age of acquisition, proficiency, and language dominance. However, the neural network(s) and temporal dynamics supporting L2 language functions are still under some debate.

In my talk I will first reflect on parameters that are (1) considered to be language-specific, and (2) to affect L2 acquisition. I will then contrast these parameters with non-language specific parameters such as temporal coherence in a given language (i.e., the alternation of strong and weak syllables, Cutler, 1994). For example, in monolingual speakers we have shown that regular alternation of stressed and unstressed syllables in sentence processing activates a brain network (pre SMA, lateral PMC, basal ganglia, cerebellum) that has been previously reported to be engaged in non-linguistic sequencing (i.e. interval duration). These results suggest that non-linguistic sequencing properties may influence language perception and production. This evidence should serve as a starting point to reflect on their role in L2 language perception and production.

**Friday, October 25th, 8.40 - 9.10
Faculty Club, Ballroom**

Invited speakers (continued)

Dr. Rachel I. Mayberry

University of California San Diego, USA

When age of language acquisition matters: Brain language processing effects of learning a first language in adolescence

Sign languages have linguistic architectures similar to that of spoken languages and are comprehended and produced similarly as well. However, unlike hearing language learners, deaf individuals often acquire sign language as a first language at ages ranging from infancy to adulthood, thus illuminating the nature of the critical period for language. How do individuals who were bereft of language throughout childhood develop it for first time in adolescence? In this talk I describe adolescent L1 acquisition in relation to infant and L2 acquisition of sign language from complementary perspectives: the content and trajectory of language development, and the neural processing of late L1 language investigated with aMEG.

Friday, October 25th, 14.05 - 14.35
Faculty Club, Ballroom

Invited speakers (continued)

Dr. Silvina Montrul

University of Illinois at
Urbana-Champaign
USA

*Dominance and attrition: Multilingualism and the
science of learning and forgetting*

Several decades of research have shown that the notion of
two or more monolinguals in one person (Grosjean, 2008)
is a myth, and even though there might be a few individu-
als who might be considered fully competent in two or more
languages in one or more dimensions, actual multilingual
balance does not exist. For most multilinguals one of the
languages is more dominant, i.e. structurally and psycho-
linguistically stronger than the other due to frequency of
language use. In fact, it is common for many speakers to
progressively lose ability in their native language (attrition)
when the second language becomes dominant, as in the case
of minority language speakers in North America and many
parts of the world.

Age of acquisition is a significant factor for optimal first
language acquisition and for second language acquisition
in an immigrant context. What my research has shown, and
what my talk is about, is that age of onset of bilingualism in
an immigrant context is a key factor in language forgetting
as well: pre-puberty children are excellent second language
learners, but they are also fast forgetters of their first
language; adults may be poor second language learners but
do not lose their first language as easily and dramatically as
children.

In this talk, I present representative results from my recent
studies investigating the linguistic abilities of first and
second generation immigrants in the United States, which
illustrate how language dominance and L1 attrition are
related in these populations depending on age of onset of
bilingualism.

**Friday, October 25th, 10.30 - 11.00
Faculty Club, Ballroom**

Invited speakers (continued)

Dr. Eric Pakulak

University of Oregon
USA

Effects of language proficiency and socio-economic status on the development of neural mechanisms supporting syntactic processing

Ongoing research in our laboratory examines the relative effects of language proficiency, socioeconomic status (SES) background, and age of acquisition (AOA) on neural organization for syntactic processing in both adults and children using event-related potentials (ERPs) and functional magnetic resonance imaging (fMRI).

Using ERPs, we have previously shown that the neural response elicited by syntactic violations varies as a function of language proficiency and SES (Pakulak & Neville, 2010) and is sensitive to delays in language acquisition independently of proficiency level (Pakulak & Neville, 2011).

Using fMRI, we also found converging evidence from complimentary methodologies that late bilinguals rely on different neural regions to achieve a level of proficiency comparable to some native speakers.

To study children, we developed a novel, ecologically valid ERP paradigm containing naturally spoken sentences in a coherent narrative accompanying an animated video. In preschool children, we found SES-related differences in the neural response to syntactic violations consistent with results from our studies of adults. Future work using this paradigm will examine the development of neural organization for syntactic processing in bilingual children.

**Thursday, October 24th, 10.40 - 11.10
Faculty Club, Ballroom**

Invited speakers (continued)

Dr. Elin Thordardottir

McGill University, Canada

The effect of amount of input on simultaneous and sequential bilingual language acquisition

This talk will report on a series of studies that aimed to quantify the effect of input on language acquisition by examining the French and English performance of monolingual and bilingual children who varied in how much they had been exposed to each language but who were matched on age (two groups, 3 years and 5 years, n=140), nonverbal cognitive level and SES. Exposure, assessed by detailed parent report, reflected the time spent in each language environment since birth.

Language performance (vocabulary, grammar, code mixing) was strongly associated with previous exposure. However, bilingual children needed to spend only half their time in a language to score comparably to monolinguals in that language. Unequal exposure patterns were mirrored by unequal performance across languages. Grammatical development followed a remarkably language specific schedule similar to that of monolingual development in each language. In contrast to accumulated language knowledge (vocabulary, morphosyntax), nonword repetition was essentially unaffected by input.

Further studies will be discussed that applied these normative data to the identification of primary language impairment (PLI) in bilingual children. Comparison of monolingual and bilingual children with and without PLI (n=56) revealed that nonword repetition separated children with and without impairment regardless of bilingualism.

Thursday, October 24th, 16.20 - 16.50
Faculty Club, Ballroom

Oral presentations

Sarah Grey

Christina Sanz,
Kara Morgan-Short,
& Michael T. Ullman

Pennsylvania State
University

The role of language experience in the neurocognition of late-learned language: Bilingual L3A vs. monolingual L2A

This study investigated bilingual advantages at adult additional language learning. It aimed to address some of the limitations in previous research and provide a multidimensional perspective on potential advantages by measuring both behavioral and neural outcomes (using event-related potentials, or ERPs), at different points in the learning trajectory, and for different linguistic targets (word order and gender agreement).

Early, highly proficient Mandarin-English bilinguals and English monolinguals were trained and tested on their learning of a Romance language-like artificial language called Brocanto2. Subjects were trained under an Instructed condition, which contained metalinguistic information about Brocanto2 together with meaningful examples and was designed to mimic traditional foreign language classroom exposure. Both groups engaged in comprehension and production practice and at two points, low and high experience, were given grammaticality judgment tasks during which ERP data was simultaneously gathered.

The behavioral results showed that under an Instructed condition bilinguals and monolinguals did not perform differently, either on practice or grammaticality judgment for either linguistic target. This may be at least partly due to a leveling effect of the Instructed context and the monolinguals' experience in foreign language classroom settings. The ERP data indicated that at low experience bilinguals and monolinguals recruited distinct neural mechanisms as indexed by P600s and late anterior negativities, but that at high experience differences in processing were less apparent for both linguistic targets. However, some suggestive evidence showed that at high experience bilinguals may have been recruiting the mechanisms underlying late anterior negativities (for gender agreement) and P600s (for word order) more strongly than the monolinguals, which may be a neurocognitive correlate of bilingual advantages at additional language learning. The results of this study will be discussed as they relate to bilingualism, neurocognition of late-learned language, and language pedagogy.

Oral presentations (continued)

Gunnar Jacobs

Kalliopi Katsika,
Mark Calley,
Lisa Martinek,
Neiloufar Family,
& Shanley Allen

Potsdam Research
Institute for
Multilingualism

Cross-linguistic syntactic priming in German-English bilinguals: the role of global and surface syntactic structure

Recent research suggests that syntactic information is shared between the two languages of a bilingual (Loebell & Bock 2003). However, proposals differ on whether representation-sharing is based on abstract syntactic structure or surface word order similarity (Hartsuiker & Pickering 2008). In the present study we examine cross-linguistic priming in German-English bilinguals comparing identical vs. non-identical word order and syntactic structure across languages. We use Prepositional Object (PO) and Double Object (DO) structures. Importantly, for these two structures, English and German share the same word order in main clauses (e.g. Der Botschafter sandte einen Brief an den Präsidenten, 'The ambassador sent a letter to the president'), but not in subordinate clauses, because German requires that subordinate verbs be clause-final (e.g. Der Autor erzählte, dass der Botschafter einen Brief an den Präsidenten sandte, 'The author said that the ambassador sent a letter to the president').

We report two cross-linguistic priming experiments, one in which word order was manipulated (Experiment 1), and one which involved the additional manipulation of syntactic structure (Experiment 2). Two groups of advanced German speakers of English read German primes and completed English targets in both experiments. In Experiment 1, the type of syntactic structure between prime and target (main vs. subordinate clause) was always the same. In Experiment 2, we investigated cross-linguistic priming from German subordinate-clause primes to English main-clause targets, and from German main-clause primes to English subordinate-clause targets.

Experiment 1 showed priming from L1 (German) to L2 (English) for main clauses, but not for subordinate clauses where the word order was different. Experiment 2 showed no cross-structural priming. These results provide evidence that global and surface-level structural similarity are very relevant in cross-linguistic priming, and that abstract structural similarity is not enough in itself to facilitate shared syntactic representation (Branigan, Pickering, McLean & Steward, 2006).

Oral presentations (continued)

Kristina Kasparian

Francesco Vespignani, & Karsten Steinhauer

McGill University

When the second language takes over: ERP evidence of L1-attrition in morphosyntactic processing

An observation shared by multilingual speakers worldwide is that it is more difficult to successfully learn a second language (L2) in adulthood than in childhood. Whether this is due to a neuro-biological critical-period is controversial; it is unresolved whether late-learners can reach the level of native-speakers in their L2 abilities and, if they can, whether it is age-of-acquisition or other factors (such as exposure or proficiency) that determine the "native-likeness" of the brain mechanisms underlying processing. Minority-language-speakers who immigrate in adulthood offer a unique opportunity to study this question, as they gradually experience a decline in L1-proficiency after years of predominant L2-use. These individuals also allow us to investigate L1-attrition (loss), the neural correlates of which are largely unexplored.

Using event-related-potentials (ERPs), the online-processing of Italian relative-clauses was examined in Italian-English minority-speakers (dominant in English) and Italian native-speakers living in Italy. Cross-linguistic differences make the study of relative-clauses highly relevant: both languages allow V-NP-subject and NP-V-object orders, whereas V-NP-object and NP-V-subject orders are ungrammatical in English. Moreover, Italian readers rely on semantic cues and subject-verb agreement to resolve sentence interpretation, whereas English readers rely primarily on word-order. We hypothesized that minority-speakers would reject V-NP-object and NP-V-subject word-orders in an online accept-ability-rating task, and would elicit different ERP patterns than Italian-natives, showing transfer from English although reading exclusively in Italian. Our results confirmed our predictions: for word-orders ungrammatical in English, minority-speakers elicited morphosyntactic-violation effects (large P600s) when reading in Italian, and no reliance on semantic-cues (no N400), in contrast to native-speakers in Italy, who showed a significant N400 effect and only weak garden-path effects (small P600).

These findings provide the first ever ERP evidence for L1-attri-tion, and innovatively demonstrate ongoing brain plasticity for language-learning, where dominance in a late-acquired L2 may actually induce changes in one's native language.

Oral presentations (continued)

Elisabeth Kay-Raining Bird

Diane Pesco,
Ludo Verhoeven,
Kate Cain,
Stefka Marinova-Todd,
& Julia Scherba de Valenzuela

Dalhousie University

Bilingual children with language and/or cognitive disabilities: An international study of context

Evidence-based practice and inclusion in appropriate settings are current mantras in education and health disciplines. However, the evidence base regarding bilingualism in preschool and school-aged children with language and/or intellectual disabilities such as those with Down syndrome, autism, cerebral palsy, or primary language impairment is limited. The opportunities and supports that individuals with language and/or cognitive disabilities are provided to acquire more than one language may be negatively impacted by this lack of evidence. Further, the context, that is, the services available and how those services are structured, vary dramatically from one community to another, both within Canada and around the world. This presentation will provide preliminary data from work being conducted by an international collaborative team including sites in Canada, the US, the UK and the Netherlands. One goal of the project is to compare and contrast policies and practices related to bilingualism in children with language and/or intellectual disabilities in six sites (Halifax, Montreal, Vancouver; Albuquerque, New Mexico, USA; Nijmegen, the Netherlands; and Manchester, the UK). Each site is constructing a description of their context which includes: a) an historical description of patterns of settlement and immigration through a search of the literature, b) a current socio-linguistic description of their community based upon census data, c) a description of the available public and private services and programs and d) a description of relevant governmental and other policies that impact language learning, education and/or children with developmental disabilities, through a comprehensive search of internet sites. Members of the international team will present on: the current available evidence, each site's context, similarities and differences across sites, and the impact of context upon the opportunities that individuals with language and/or intellectual disabilities have to become bilingual. Possible avenues for future research will also be explored.

Oral presentations (continued)

Jennifer Krizman

Jessica Slater,
Viorica Marian,
Erika Skoe,
& Nina Kraus

Northwestern
University

Biological enhancements in speech processing depend on bilingual experience

Bilinguals and monolinguals differ on how they process sound. Relative to monolinguals, bilinguals show more robust encoding of the fundamental frequency (F0) of speech, a feature known to underlie pitch perception as well as auditory grouping3. We hypothesize that this bilingual F0 enhancement arises through daily exposure to two languages, which engenders selective plasticity of auditory features important for communication. Therefore, we predict that in bilinguals, the F0 enhancement would scale with amount of bilingual experience, with more years of experience interacting in two languages leading to more robust F0 encoding. To test this hypothesis, we recorded auditory brainstem responses in two groups of bilingual children, matched for age at test but differing in age of second language acquisition. One group learned English and Spanish simultaneously from birth with ~eight years of bilingual experience. The second group learned the two languages sequentially. This sequential group spent their first 5 years as monolingual Spanish speakers and had ~three years of experience with both English and Spanish. Simultaneous bilinguals had more robust subcortical encoding of the F0 compared to sequential bilinguals, across a range of speech sounds (/da/, /ba/ and /ga/). These findings indicate that the enhancement in subcortical representation of the F0 is experience-dependent, developing with increasing experience communicating in two languages. The data support the notion that bilingual language experience leads to a unique neural signature in the auditory processing of sound.

Oral presentations (continued)

Tania Leal Mendez

Roumyana Slabakova,
& Thomas Farmer

University of Iowa

The Relationship Between Prediction and Proficiency in On-line L2 Processing

Native speakers (NS) actively generate predictions about incoming linguistic input during on-line L1 comprehension, aiding the ability to quickly and accurately interpret an incoming linguistic signal. Predictions are generated based on multiple cues available in linguistic and social contexts, suggesting L2 comprehension can be characterized as the experience-driven progressive learning of the L2 cue structure. Increased exposure to L2 probabilistic statistical regularities confers the ability to generate progressively stronger, more accurate expectations about upcoming linguistic units during on-line comprehension.

Based on previous work in L1 processing, we hypothesize a significant relationship between L2 proficiency and increased prediction-generating abilities during on-line L2 comprehension. Focusing on a long-distance dependency in Spanish (Clitic Left Dislocation), we test whether L2ers can predict later-occurring grammatical elements using preceding discourse context. In a self-paced reading experiment, 36 Spanish NSs and 77 Spanish L2-Learners (English NSs) read a discourse in which a topicalized NP was followed by a target sentence in which the clitic appeared early (expected via the context-conferred prediction), or late (unexpected). The discourse-conferred expectation is that a clitic will appear before the matrix verb. Learners also completed a standardized proficiency test.

A significant main effect of Clitic-Presence for NSs was elicited: Matrix verb RTs were significantly higher when the clitic was not present relative to when it was. Learners demonstrated a significant positive correlation between proficiency scores and matrix-verb RTs when the clitic was absent relative to when it was present. With increasing proficiency, nonnative RTs appeared progressively more similar to NSs in terms of the magnitude of RTs elicited by the expectation violation. Thus L1 and L2 processing appear to be at least partially contingent on the ability to accurately generate predictions that can be subsequently assessed during processing.

Oral presentations (continued)

Kaitlyn Litcofsky

& Janet G. van Hell

Pennsylvania State University

A neurocognitive study of sentential codeswitching in low and high proficient bilinguals

Bilinguals often fluently switch between their languages in conversation. While this codeswitching appears fluent, psycholinguistic and neurocognitive research has shown that switching between languages incurs a processing cost in both production and comprehension. However, the majority of studies examined language switching between isolated items. This research has found that processing costs are asymmetrical across language switching directions: it is harder to switch into the dominant language than into the weaker language. This finding is explained by the need to inhibit the dominant language while processing in the weaker language.

Relatively little is known about the processing of codeswitches in a sentence context, however. In two experiments, sentential codeswitching was examined using event-related potentials (ERPs) in two groups of Spanish-English bilinguals: high proficient bilinguals immersed in L2 English who codeswitch frequently, and lower proficient bilinguals immersed in L1 Spanish who do not codeswitch often. Stimuli were 160 sentences that began in Spanish or English and contained a codeswitch into the other language or not. Both groups of bilinguals showed late positivity effects in response to codeswitched words as compared to non-codeswitched words, but only when switching from the dominant to the weaker language, not in the reverse language switching direction. These results are in contrast to the language switching studies, and indicate that codeswitching in a sentential context requires different processing mechanisms. Given the late positivity, it appears that sentential codeswitching may rely on sentence-level integration or monitoring mechanisms related to activation of the weaker language. Future analyses will further examine how more fine-grained measures of proficiency, frequency and nature of codeswitching, and language experience modulate how codeswitches are processed.

Oral presentations (continued)

Monika Molnar

Marcela Pena,
Ileana Quinones,
Martijn Baart,
Cesar Caballero,
& Manuel Carreiras

Basque Centre
on Cognition
Brain and
Language

Native speech processing is supported by different neural specialization in young monolingual and bilingual infants

Behavioral evidence suggests that bilingual infants process their native languages differently as compared to their monolingual peers by 4 months of age (e.g., Bosch & Sebastian-Galles, 1997). It is unclear, however, whether the differences are due to the limitations of behavioral testing paradigms (e.g., Albarade-Castellot et al., 2011), or monolingual and bilingual infants rely on different native language processing mechanisms. To address this issue, we used near-infrared spectroscopy (NIRS) to assess changes in the concentration of total hemoglobin during a passive auditory listening paradigm in temporal areas of the right hemisphere (RH) and the left hemisphere (LH) in 54 Spanish-Basque mono-lingual and bilingual infants. Unlike behavioral paradigms, this method requires no explicit response from the infant; therefore, differences due to task demands are minimized across popula-tions. Brain activation was recorded during the presentation of 10-second long Basque or Spanish connected speech samples, and backward speech (auditory baseline conditions), as well as silence (baseline). Monolingual infants have demonstrated clear left-lateralized responses to native (familiar) speech in comparison to non-native speech, backward auditory stimuli, or silence (similarly to Peña et al., 2003), Importantly, however, bilingual infants in the current study exhibited no LH advantage in processing either of their native languages. Although bilingual infants demonstrated different processing of Basque and Spanish as compared to the baseline conditions (backward speech and silence), the effect was equally observed in both hemispheres. Additionally, no differences in the bilingual responses to Spanish and Basque were observed. Our overall results demonstrate, the first time, that the development of neural networks specializing for native spoken language processing follows different patterns in monolingual and bilingual infants; and that this difference is present as early as 4 months of age that represents an important period during cortical development related to language processing.

Oral presentations (continued)

Veronica Whitford

& Debra Titone

McGill University

The effects of lexical entrenchment and cross-language activation during bilingual reading

Eye movement measures of bilingual reading show different patterns of first- (L1) and second-language (L2) word frequency effects (FEs) within and across younger bilingual adults (Whitford & Titone, 2012). Open questions are whether a similar pattern is true for older bilingual adults, and whether such effects are driven by reduced lexical entrenchment, cross-language activation, or both. Determining the locus of bilingual FEs across younger and older adults is of particular importance, as such will elucidate the organization and retrieval of L1 and L2 lexical representations in memory. We thus investigated whether current L2 exposure, an indicator of lexical entrenchment, and non-target-language neighbourhood density, an indicator of cross-language activation, modulate L1 and L2 FEs in 86 healthy younger (aged 19-34) and 43 healthy older (aged 61 to 87) French-English bilinguals during L1 and L2 paragraph reading. With respect to lexical entrenchment, gaze durations on content words for younger adults showed larger L2 vs. L1 FEs, and also larger L1 FEs in bilinguals with increased L2 exposure. Gaze durations for older adults also showed larger L2 vs. L1 FEs, as well as larger L1 and L2 FEs than younger adults (see Kliegl et al., 2004; Kemper et al., 2004; Rayner et al., 2006, for similar findings during monolingual reading). With respect to cross-language activation, in both younger and older adults, increased L1 neighbourhood density during L2 reading facilitated gaze durations for low-frequency L2 words. However, cross-language activation was greater in older vs. younger adults, potentially reflecting age-related differences in executive control processes. Thus, both lexical entrenchment and cross-language activation interact during bilingual reading irrespective of age, suggesting that they may be two sides of the same coin.

Oral presentations (continued)

Seth Wiener

Kiwako Ito

Ohio State University

Bayesian learning and word recognition in bilingual speakers of tone languages

The influence of Bayesian probabilities has long been instantiated in models of spoken-word recognition at sublexical and lexical levels. These frequency effects extend even to L2 recognition, word recognition in tonal languages, however, involves processing of suprasegmental cues; the degree to which suprasegmental probabilities are stored and used remains an open question, especially among bilinguals.

The current study investigates how syllable-specific tonal probabilities guide online lexical access. Bilingual (Mandarin and another tonal language) speakers' (N=28) and monolingual standard Mandarin speakers' (N=28) eyes were monitored while they searched for Chinese characters that matched words spoken by a native Mandarin speaker. Each critical slide showed four characters: the target, a cohort competitor with the identical syllable but either a more or less probable tone than the target, a rhyme competitor with the same vowel-tone combination as the target, and an unrelated distractor with a comparable syllable frequency. The target word had either high or low syllable frequency with either the most probable or least probable tone.

The results showed group differences in online fixation patterns but not in offline mouse-responses. For both groups, mouse click response times were fastest for infrequent syllables with most probable tones, and slowest for infrequent syllables with least probable tones. In online eye-movement responses, only the monolingual group showed the effect of tonal probability; their fixations were fastest for the infrequent syllables with probable tones and slowest for the infrequent syllables with improbable tones due to the high competition from the more probable cohort. Bilingual speakers showed no effect of tonal probability on fixation patterns.

These findings suggest that highly bilingual speakers track and use Mandarin tonal probabilities like monolinguals, but their sensitivities to L2 tonal information may lag behind monolinguals for online word recognition.

Poster presentations

Poster presentations will take place at **Thomson House** (see page 28 for map), in the **Ballroom** (posters 1 - 24) and **Room 404** (posters 25 - 36).

Poster presentations are divided into two sessions (1 and 2), then subsequently divided into first and second halves for each session (A and B), to allow presenters a chance to view other posters. Posters must remain mounted for the entire duration of each session, but presenters are only required to be at their poster during the first or second half.

Posters MUST be removed immediately after the poster session, before returning to the Faculty Club. Any posters remaining on the poster boards will be discarded.

Below are the poster assignments for each session. In cases where the first author is unable to present the poster, the presenting co-author has been underlined.

Poster session 1: Thursday, October 24th (13.00-14.30)

Session 1A (13.00 - 13.45)

Main author (abstract page) Main author affiliation	Co-authors *Title*	Board
Jesse Stewart (p. 35) University of Manitoba	Erin Wilkinson *Disfluencies in signed language narratives*	#1
Nathalie Bélanger (p. 36) University of California, San Diego	Jill Morford, & Keith Rayner *Automatic American Sign Language (ASL) activation during reading in ASL-English deaf bilinguals*	#3
Pan Liu (p. 37) McGill University	Simon Rigoulot, & Marc Pell *Effects of cultural immersion on the processing of nonverbal cues*	#5
Beinan, Zhou (p. 38) University of Birmingham	Andrea Krott *Does being bilingual enhance intra-language competition suppression?*	#7
María Cruz Martín (p. 39) Pennsylvania State University	Teresa Bajo, & Judith Kroll *Different mechanisms of inhibitory control in bilingual lexical production*	#9

Poster presentations (1A continued)

April Humphrey (p. 40)
Hunter College

Virginia <u>Valian</u>
No difference in executive control for monolingual and multilingual young adults as measured by Simon and Flanker tasks

#11

Chelsea Da Estrela (p. 41)
Concordia University

Krista Byers-Heinlein
Effects of language dominance on bilingual word learning at 14-months

#13

Helen Engemann (p. 42)
CNRS, Laboratoire Structures Formelles du Langage

Motion expression in simultaneous and successive bilingualism: Effects of age and typology

#15

Mark Amengual (p. 43)
Furman University

Cross-linguistic influence and lexical effects in the perception and processing of early Spanish-Catalan bilinguals

#17

Michele Burkholder (p. 44)
University of Ottawa

Laura Sabourin, Christie, Brien, & Ayşegül Kutlu
Age of acquisition and the bilingual lexicon: Behavioural and neurophysiological approaches

#19

Naveed Sheikh (p. 45)
McGill University

Debra Titone
Embodied Semantics: An eye-movement study of first and second language sentence reading

#21

Rachel Klassen (p. 46)
University of Ottawa

Grammatical gender systems in the mental lexicon: Insights from neuter in Spanish-German bilinguals

#23

Henrietta Lempert (p. 47)
University of Toronto

Effect of animacy on L2 verb number agreement in L1 Chinese

#25

Esther Schott (p.48)
Potsdam Research Institute for Multilingualism

Sabrina Gerth, & Harald Clahsen
Morphological constraints in spoken language comprehension: Evidence from acceptability judgments and eye movements in native and non-native listeners

#27

Zhiyin Renee Dong (p. 49)
University of Delaware

Arild Hestvik
Processing of Past Tense and Filler Gap Dependencies by Chinese 2nd Second Language Learners of English

#29

Poster presentations (1A and 1B)

John Drury (p. 50) Stony Brook University	Mariia Kaliuzhna, Hakima Guella, Anne Cheylus, & Viviane Deprez *Cross-linguistic interference in French/Arabic bilingual gender agreement processing: ERP evidence*	#31
Darren Tanner (p. 51) University of Illinois	Eleonora Rossi, & Janet G. <u>van Hell</u> *When syntax beats semantics: Electrophysiological measures of cue interaction in L2 sentence comprehension*	#33

Session 1B: 13.45 - 14.30

Sabine Burfin (p. 52) Laboratoire de Psychologie et NeuroCognition de Grenoble	Marc Sato, Sylvain Harquel, Aurélie Campagne, Christophe Savariaux, & Sonia Kandel *Visual speech speeds up the neural processing of phonemes that do not exist in our native language*	#2
Eliane Segers (p. 53) Radboud University Nijmegen	Ludo Verhoeven, Indira Day, Liane Hoogeveen, & Mariska Poelman *Bias in the assessment of high-ability second language learners*	#4
Natalie Rangel (p. 54) University of Texas at Austin	María Irene Moyna, & Verónica Loureiro-Rodríguez *Results of a matched-guise test in two Texas border areas*	#6
Xiaoming Jiang (p. 55) McGill University	Silke Paulmann, Jessica Robin, & Marc Pell *Does L2 proficiency facilitate vocal emotion recognition in a non-native language?*	#8
Tali Bitan (p. 56) University of Haifa	Michael Nevat, Qamar Daher, & Karin Levenberg *Effects of age and sleep on learning morphological inflections in an artificial language*	#10
Aruna Sudarshan (p. 57) McGill University	Shari Baum *Bilingual lexical selection in aging: An individual differences in executive functions perspective*	#12

Poster presentations (1B continued)

Susan Sayehli (p. 58)
Lund University

Developmental perspectives on transfer

#14

Justin Koh (p. 59)
McGill University

Heather Goad, Audrey Delcenserie, & Fred Genesee
Atypical word-level prominence in internationally-adopted French-speaking children

#16

Caitlin Ting (p. 60)
Pennsylvania State University

Janet van Hell
Individual differences in within- and across-language homograph processing

#18

Yu-Cheng Lin (p. 61)
University of Texas at El Paso

Ana Schwartz
Deos the bilingual mnid raed the wrods as a whloe?

#20

Alejandro Martínez (p. 62)
Basque Centre on Cognition
Brain and Language

Elena Salillas
Code switching for math in bilinguals. An ERP study

#22

Stefanie Nickels (p. 63)
McGill University

YanJing Wu, Guillaume Thierry, & Karsten Steinhauer
Effects of prosodic background and proficiency on syntactic processing in L2: ERP evidence from German and Chinese learners of English

#24

Shukhan, Ng (p. 64)
University of Texas at San
Antonio

Nicole Y. Y Wicha
Timing is everything in the bilingual brain: Dissecting the time course of lexical access using a novel target detection paradigm

#26

Michael Tyler (p. 65)
University of Western Sydney

Fabien Elysee-Collen
Early-sequential bilinguals' recognition of L1-foreign-accented words

#28

Tokiko Okuma (p. 66)
McGill University

The development in interpreting Japanese pronouns by adult bilingual speakers

#30

Poster presentations (1B and 2A)

Abdelkader Hermas (p. 67) Université Ibn Zohr	*The relative complementizer in L3 English:* *L1-L2 transfer effects and feature reassembly*	#32
François-Xavier Brajot (p. 68) McGill University	*Articulatory phonetics in simultaneous bilingual* *speakers: Cross-linguistic convergence on static* *measures vs. divergence on dynamic measures*	#34

Poster session 2: Friday, October 25th (12.20 - 13.50)
Session 2A (12.20 - 13.05)

Dominique Bédard (p. 69) Université de Montréal	Alexandra Marquis, Phaedra Royle, Laura Gonnerman, & Susan Rvachew *Comparing oral and written morphosyntax in* *monolingual and multilingual children: A longitudinal* *study*	#1
Audrey Delcenserie (p. 70) McGill University	Fred Genesee *Language and memory abilities of internationally-adopted* *children from China*	#3
Maria Fionda (p. 71) University of Mississippi	*The role of executive function in L2 word order processing*	#5
Soo-Ok Kweon (p. 72) Pohang University of Science and Technology	David Tromblee, & John Drury *L1/L2 influence on visual attention in the perception of* *motion events*	#7
Zhamilya Yerimbetova (p. 73) Boston University	Catherine Caldwell-Harris *"Because there was no other way": The effect of* *motivational drives on later language learning*	#9
Robert Reinecke (p. 74) Concordia University	Krista Byers-Heinlein *Where is la grenouille? Parental language mixing with* *bilingual infants: A more than common behaviour*	#11

Poster presentations (2A continued)

Tim Poepsel (p. 75) Pennsylvania State University	Daniel Weiss *The consequences of bilingualism for statistical word learning*	#13
Courtney Johnson Fowler (p. 76) Pennsylvania State University	Carrie Jackson *What role does grammatical gender play during L2 sentence processing?*	#15
Irina Sekerina (p. 77) CUNY College of Staten Island	Luca Campanelli *Real-time processing of gender and number agreement by heritage Russian speakers*	#17
Rhonda McClain (p. 78) Pennsylvania State University	Eleonora Rossi, & Judith Kroll *Using ERPs to investigate the scope and time course of inhibitory control in bilingual production*	#19
Jonathan Berken (p. 79) Montreal Neurological Institute	Jen-Kai, Chen, Vincent Gracco, Kate Watkins, Shari Baum, & Denise Klein *Speech production in native and non-native languages: An fMRI study of overt sentence reading*	#21
Annie Gilbert (p. 80) McGill University	Irina Pivneva, Yassemine Khawajkie, & Debra Titone *Individual differences in second language ability and executive control modulate voice onset time during bilingual speech production*	#23
Inge Anema (p. 81) State University of New York at New Paltz	*The use of English suprasegmental cues in silent reading in Dutch speakers of English*	#25
Heather Goad (p. 82) McGill University	Moti Lieberman, & Lydia White *Parsing ambiguous relative clauses: L2 sensitivity to prosodic cues to high and low attachment*	#27
Amelia J. Dietrich (p. 83) Pennsylvania State University	Paola E. Dussias *Probabilistic cues in bilinguals processing*	#29
Michael Blasingame (p. 84) Northwestern University	Ann Bradlow *The role of language dominance and early acquisition in speech learning by switched-dominance bilinguals*	#31

Poster presentations (2A and 2B)

Sarah Fairchild (p. 85) Pennsylvania State University	Janet van Hell *Codeswitching habits of Spanish heritage speakers:* *Testing the Minimalist Program and the Matrix* *Language Framework*	#33
Vanessa Taler (p. 86) University of Ottawa	Shanna Kousaie, Julien Blacklock, Dominique Fijal, & Natalie Phillips *The relationship between codeswitching behaviour and* *neuropsychological performance*	#35

Session 2B (13.05 - 13.50)

Catherine Caldwell-Harris (p. 87) Boston University	Rama Novogrodsky, Robert Hoffmeister, Sarah Fish, Jon Henner, & Rachel Benedict *L1 ability is a better predictor than age for L2 reading* *comprehension for deaf readers*	#2
Marie Pourquié (p. 88) Université de Montréal	*Multilingualism and aphasia: theoretical and therapeutic* *perspectives*	#4
Brendan Tomoschuk (p. 89) Pennsylvania State University	Guillaume Thierry, Janet van Hell, & YanJing Wu *Priming effects in color perception in Greek-English and* *Russian-English bilinguals*	#6
Rachel Groenhout (p. 90) University of Maine	Nivja De Jong, Rob Schoonen, & Jan Hulstijn *Second language fluency: Speaking style or proficiency?*	#8
Hilary Duncan (p. 91) Concordia University	Shanna Kousaie, & Natalie Phillips *EEG coherence and executive functions in monolinguals* *and bilinguals*	#10
Irina Pivneva (p. 92) McGill University	Naveed Sheikh, Veronica Whitford, Julie Mercier, & Debra Titone *Is domain-general executive control among bilingual* *young adults predicted by individual differences in* *bilingual history, proficiency & use?*	#12
Liz Smeets (p. 93) McGill University	Luisa Meroni, & Sharon Unsworth *Acceleration in the bilingual acquisition: the case of* *specific indefinites*	#14

Poster presentations (2B continued)

Alexandra Vorobyova (p. 94)
Université de Québec
à Montréal

Overspecified references: An experiment on lexical acquisition in virtual environments

#16

Katsuo Tamaoka (p. 95)
Nagoya University

Michael Mansbridge, Zhuang Lianzhen, & Rinus G. Verdonschot
The insensitivity of native Japanese speakers to English tense inconsistency

#18

José Alemán Bañón (p. 96)
University of Kansas
University of Reading

Alison Gabriele, Robert Fiorentino, & Kristi Bond
Tracking brain responses to morphosyntax: a longitudinal ERP study of novice learners of Spanish

#22

Lara Pierce (p. 97)
McGill University

Denise Klein, Jen-Kai Chen, & Fred Genesee
Neural activation during phonological working memory in international adoptees

#24

Michael Madden (p. 98)
CUNY Graduate Center

Andrew Rosenberg
Pfft, my sarcasm is better than yours

#26

Matthew Carlson (p. 99)
Pennsylvania State University

Michael Blasingame, Angela Fink, & Matthew Goldrick
Do you hear what I hear? Priming language-specific phonotactic constraints in speech perception

#28

Meghan Clayards (p. 100)
McGill University

Elizabeth Wonnacott
A case study of childhood L2 learning of phonological contrasts

#30

Rosa Guzzardo Tamargo (p. 101)
Universidad de Puerto Rico

Paola E. Dussias
Reading natural code-switches is not costly to the comprehension system

#32

Kinsey Bice (p. 102)
Pennsylvania State University

Britney Massimino, & Judith Kroll
On the fate of the native language during second language learning

#34

Poster presentation abstracts

Jesse Stewart

& Erin Wilkinson

University of Manitoba

Disfluencies in signed language narratives

Fluent language processing involves an interaction between linguistic and cognitive organization that is chunked in a planning unit. Disfluency is defined as language disruptions in language production. In speech, if language processing lags behind cognitive processing at the completion of a planning unit, then speakers will show disfluency in various forms, e.g., pauses, fillers like 'hmmm', and/or repetitions to allow more time to plan the following unit. However, nearly all studies on disfluency concern spoken languages. Only a few studies on signed languages, mostly on 'slips of the hand', show that disfluency occurs in SLs as well (Klima and Bellugi 1979, Newkirk et al 1980, Dively 1998, Leuninger et al. 2002).

This study revisits Emmorey et al's (2000) findings that English speakers have a significantly higher amount of disfluencies per minute compared to ASL signers. We suggest that these different rates are caused by other disfluency types that are modality/language specific. By focusing on these modality specific disfluencies, we attempt to deliver a more in-depth analysis of the cognitive and communicative processes involved in disfluent signing. By isolating and subcategorizing disfluencies, we aim to document (1) the modality differences and processing similarities between spoken and signed language, (2) explore how disfluencies aide in coordinating communication by analyzing phrase level environments and (3) look at how facial expressions and body movement are used in disfluent events.

Our preliminary results suggest that disfluencies are just as common and complex as those found in spoken languages. This implies that both speakers and signers implement similar strategies for dealing with cognitive planning and coordinative processes. However, due to the modality differences between spoken and signed languages, surface level disfluencies can appear quite remote from those in spoken languages making this under-investigated area of discourse of great importance.

Poster presentation abstracts

Nathalie Bélanger

Jill Morford,
& Keith Rayner

University of California,
San Diego

Automatic American Sign Language (ASL) activation during reading in ASL-English deaf bilinguals

Much evidence suggests that bilinguals activate words in both languages when reading either in their L1 or in their L2. This has been shown across languages sharing scripts (English-French), but also across scripts (English-Chinese). Remarkably, this effect is also found across modalities (spoken vs. signed languages; languages that do not overlap in input/output modalities and that have distinct phonological/structural components). In other words, when confronted with English print, ASL-English bilinguals activate ASL, even if there is no relationship between these languages. The present experiment extended prior research and embedded pairs of unrelated English words for which translation equivalents in ASL were either related (signs that share several phonological/structural parameters in ASL) or unrelated (no overlap at all between the two sign equivalents in ASL) within sentences (RELATED: The cats will be sick if they touch the plant's leaves; UNRELATED: The cats will be safe if they touch (target) the plant's leaves.) Eye movement measures on the target words suggest that while reading English sentences, ASL was activated extremely early in deaf ASL-English bilinguals. This effect was modulated by the participants' L2 (English) proficiency. The present results extend the notion that deaf readers exhibit unique characteristics during reading.

Poster presentation abstracts

Pan Liu

Simon Rigoulot,
& Marc Pell

McGill University

Effects of cultural immersion on the processing of nonverbal cues

There is evidence that culture affects how adults attend to different information sources in communication; e.g., East Asians may be more attuned to vocal cues, whereas Westerners may be more oriented to facial expressions. This raises the question: does living in a new cultural/linguistic environment (cultural immersion) influence how adults process vocal/facial cues? Here, we gathered both on-line/electrophysiological and off-line/behavioural data to test how vocal/facial emotions are processed at 'early' and 'late' stages by Chinese, English Canadians, and Chinese immigrants in Canada. Using an emotional Stroop task, participants were presented face-voice pairs expressing congruent/incongruent emotions and judged the emotion of one stimulus while ignoring the other, while brain activity was recorded. Behavioural accuracy and N400 component were analyzed to index responses to congruent/incongruent semantic meanings in conditions where voice or face was focused. To estimate the interference effect of to-be-ignored modality on emotional responses, difference accuracy (congruent-incongruent) and difference N400 (incongruent-congruent) were calculated. Immigrants exhibited similar behavioural accuracy to Canadians: larger difference accuracy (i.e., interference effect) in judging voices than faces, suggesting that these two groups were more attuned to faces and had difficulty ignoring them. In contrast, immigrants did not resemble Canadians in N400 but showed an analogous pattern to Chinese, i.e., smaller difference N400/interference effect in voice judgement which indicates that they were more oriented to voices and less susceptible to irrelevant faces. These results demonstrate that cultural immersion plays a role on behavioural level where immigrants perform similarly to Canadians, but not on neural semantic level. It implies that immigrants retain a sensitivity to vocal cues characteristic of their native culture as implied by early, on-line responses, although attentional biases to faces characteristic of the host/Western culture may influence later processing stage in behaviour. These findings provide insights into how cultural immersion shapes communication and information processing.

Poster presentation abstracts

Beinan Zhou

& Andrea Krott

University of Birmingham

Does being bilingual enhance intra-language competition suppression?

It is generally assumed that for bilingual speakers both the target and the non-target languages are concurrently active. While this appears disadvantageous because it requires constant inhibition of the non-target language, the intense exercise of such inhibition might also bring advantages. It has been argued that it improves speakers' executive functioning in non-verbal tasks (Bialystok, Craik, Green, & Gollan, 2009). This implies that bilingual inter-language control is achieved through general cognitive control mechanisms. Indeed, Gollan et al.(2011) found a relationship between interlanguage error rates in a verbal fluency task and non-verbal task error rates. Interestingly, they did not find a relationship between intra-language and non-verbal task error rates, suggesting that intralanguage control is not achieved through general cognitive control mechanisms.

We investigated whether being bilingual enhances speakers' intra-language interference control and whether intra-language control is achieved through general cognitive control or language-specific control mechanisms. We utilised the semantic blocking paradigm (Kroll & Stewart, 1994) to test intra-language control ability, the Simon task (Simon & Wolf, 1963)and the Spatial Stroop task (Bialystok, 2006) to test nonverbal interference inhibition ability. Monolingual English and highly functioning English/Chinese bilingual speakers took part in the experiment.

Compared to monolinguals, bilinguals showed a smaller reaction time effect in the Simon task and a smaller accuracy effect in the Spatial Stroop task, but not in the semantic blocking task. Similarly, delta plot analyses (Ridderinkhof, 2002) showed that bilinguals executed stronger inhibitory control than monolinguals in both non-verbal tasks, but not in the semantic blocking task. Furthermore, the interference effects in the two non-verbal tasks correlated with each other, but not with the verbal task.

Our results add to Gollan et al.'s (2011) evidence that bilinguals do not have advantage in intralanguage interference control, and that intra-language interference control might not be achieved through general cognitive control mechanisms.

Poster presentation abstracts

María Cruz Martín

Teresa Bajo,
& Judith Kroll

Pennsylvania State
University

Different mechanisms of inhibitory control in bilingual lexical production

Past research shows that lexical access is non-selective with respect to language, allowing cross-language interactions to occur in both comprehension and production (Dijkstra, 2005; Guo, Liu, Misra, & Kroll, 2011). A key question in bilingual research has been to understand the control mechanisms that allow bilinguals to select the language they intend to use. Language comprehension and production potentially differ in the way in which bilinguals achieve control of their two languages, e.g., in the time course of inhibition.

In past research, we have shown that cross-language inhibition in comprehension seems to be relatively short-lived (Martín, Macizo, & Bajo, 2010). In contrast, studies of lexical production have shown that inhibition of the language not in use can be long lasting (e.g., Misra, Guo, Bobb, & Kroll, 2012), suggesting that there are multiple mechanisms of control. The present study explored the nature of the control mechanisms that underlie language selection in bilingual production and specifically whether there is evidence for both automatic and controlled selection processes.

Relatively proficient Chinese-English bilinguals performed a picture naming task in language blocked or language mixed conditions (Guo et al., 2011). In one condition, they were instructed to name the picture, in another they also had to perform a concurrent updating task.

Preliminary results showed that the concurrent task affected performance differentially in the blocked and mixed conditions. Under mixed conditions that included the demanding updating task, bilinguals who were strongly L1 dominant were as slow to speak the L1 as the L2. The updating task did not eliminate the inhibition of L1 under mixed conditions. In contrast, introducing the updating task in the blocked conditions appeared to eliminate the inhibitory effect of L1 when it followed L2. We discuss the implications of the results for models of bilingual control.

Poster presentation abstracts

April Humphrey

& Virginia Valian

Hunter College

No difference in executive control for monolingual and multilingual young adults as measured by Simon and Flanker tasks

Lifelong, balanced bilinguals are reported to exhibit greater cognitive control than monolinguals, but little is known about different subgroups of bilinguals or trilinguals. We report data on 216 young adults (mean age = 19, range = 18–25; 170 females) for the Simon and Flanker tasks. We performed a fine-grained separation into 9 subgroups: monolinguals; lifelong balanced bilinguals; late balanced bilinguals; early English dominant to late balanced; late English dominants; lifelong English dominants; lifelong non-English dominants; early non-English dominant to late English dominants; and trilinguals. English proficiency, English word-naming ability, age, sex, computer use, and socio-economic status served as control variables. Self-reported proficiency in and frequency of use of English correlated highly with an objective test of English proficiency and with word-naming ability, suggesting that participants were accurate self-appraisers of their language fluency.

We measured reaction time differences between responses to congruent and incongruent stimuli. All groups showed longer RTs for incongruent stimuli in both tasks. RTs overall were similar among all bilingual groups and monolinguals and similar overall to those previously reported in the literature. We collectively compared all bilingual groups to monolinguals and compared each bilingual group to monolinguals. In no case was there an advantage for bilinguals. Trilinguals had longer RTs overall and, if anything, showed a greater cost of incongruent stimuli in the Flanker task. Additionally, we compared bilingual speakers of common non-English languages with monolinguals and bilingual speakers of less commonly used languages. Finally, we compared performance in the first and second halves of trials on both tasks. Groups performed similarly in both analyses.

Contrary to some reports, then, our large sample suggests that being bilingual does not provide advantages to young adults in cognitive processing; being trilingual has the negative effect of slowing responses overall. We discuss the possible reasons for discrepant findings.

Poster presentation abstracts

Chelsea da Estrela

& Krista Byers-Heinlein

Concordia University

Effects of language dominance on bilingual word learning at 14-months

By age 14 months, bilingual infants can associate words with objects in experimental settings (Byers-Heinlein et al., 2013). However, research on bilingual infants' word learning has focused on monolingual situations, where only words from a single language are encountered. Yet in reality, bilingual infants regularly switch between their languages, and must learn words in each. Can bilingual infants concurrently learn words from each of their two languages in the same experimental procedure? Given evidence that exposure to language mixing is associated with smaller vocabulary size amongst bilinguals (Byers-Heinlein, 2013), language switching within the same word learning paradigm might be challenging.

The current study investigated 14-month-old French-English bilingual infants' (N = 10) ability to learn words presented in English and French sentences. Infants were familiarized with two novel word-object pairings using a Tobii eyetracker. One word was presented in English sentences ("Look, it's the bos!") and the other word was presented in French sentences ("Regarde, c'est le kern!"). On each of 4 test trials, infants saw both objects and heard isolated tokens of one of the words. Proportion looking time to the target object was calculated and compared to chance (.50).

Infants successfully learned the word familiarized in their dominant language (M = .60, p = .018) but did not learn the word familiarized in their non-dominant language (M = .51, p = .691). Interestingly, when tested using the same procedure, monolingual English and French infants successfully learned both words even though one word had been taught in a language foreign to them (da Estrela & Byers-Heinlein, 2013).

These results indicate that in language switching situations, early bilingual word learners prioritize their dominant language. Further, these results confirm that the same word learning task can present different challenges to bilingual and monolingual infants (Fennell et al., 2007; Mattock et al., 2010).

Poster presentation abstracts

Helen Engemann

CNRS, France

Motion expression in simultaneous and successive bilingualism: Effects of age and typology

An important question in child bilingualism research concerns the factors determining the course of acquisition, both external (input quantity and quality, age of onset) and internal (structural properties), and their interaction. In this context, the present paper proposes an approach that compares acquisition processes across different learner types (early child L2 and 2L1 from birth) as a way of disentangling the various factors at work (following Meisel 2008, Unsworth 2005). Whilst most research in this domain has been devoted to the acquisition of grammatical properties (e.g. Meisel 1990, Paradis et al. 2008), this paper is concerned with the development of motion event expressions (Talmy 2000), which allows an analysis going beyond the sentence level, since motion typology involves grammatical, lexical as well pragmatic and discourse properties.

Based on methodology developed by Hickmann and Hendriks (2006), 40 sequential and simultaneous English-French bilingual children (aged between 4 and 10 years, 10/group) described motion events presented to them as animated cartoons in both languages. The results show parallels as well as differences between child L2 and 2L1 learners' event descriptions, revealing cross-linguistic interactions in both learner types, although these are more pronounced in the L2 group. However, learner type differences are outweighed by language effects: Independently of learner group, children show greater difficulties with French lexicalisation patterns than with English. This accords with findings by recent adult L2 studies which indicate persistent transfer from the satellite-framing L1 when the L2 is verb-framed (Cadierno 2004, Larrañaga et al. 2012). I argue that this asymmetric performance pattern is due to the transparency and resulting cue reliability (MacWhinney 1992) exhibited by the systematic English pattern, in contrast to the highly variable French system. I discuss implications for the role of language-internal factors in L2/2L1 acquisition and for recent theories of cross-linguistic influence in bilingual development.

Poster presentation abstracts

Mark Amengual

Furman University

Cross-linguistic influence and lexical effects in the perception and processing of early Spanish-Catalan bilinguals

Spanish-Catalan bilinguals in Barcelona have been shown to have difficulties perceiving the Catalan-specific mid-vowel contrasts le/4c/ and /o/-/o/ in spite of early and extensive exposure to Catalan. They are also reported to inconsistently identify mispronunciations when the mid-vowel of a real word (e.g. /scl/ 'sky') is replaced with the alternate mid-vowel (e.g. non-word */sell). In contrast, recent studies in Majorca show that other Spanish-Catalan communities maintain the mid-vowel contrasts in production and perception. Since Majorcans are not 'deaf' to these contrasts, they may also have more explicit lexical representations that include specific mid-vowels. In the present project, 60 Majorcan Spanish-Catalan bilinguals (30 Catalan-dominant, 30 Spanish-dominant) completed perceptual identification and discrimination tasks and a forced-choice lexical decision task in which participants were presented with either words (e.g. /scl/ 'sky') or non-words (*/sel/) containing front or back mid-vowels. Non-words were based on real words, but with the alternate mid-vowel in stressed position. The results indicate that even though these early bilinguals were able to accurately perceive the mid-vowel contrasts in identification and discrimination tasks, they struggled to identify non-words that differed from a real word in only the mid-vowel. There were also language dominance and cognate status effects: Spanish-dominants exhibited higher error rates than Catalan-dominants, and lexical decision accuracy was affected by cognate status, with words more frequently miscategorized in cognates than in non-cognates. These findings suggest that making explicit judgments about phonemic category membership (i.e., identification and discrimination tasks) does not entail that listeners have appropriate representations at the lexical level. Additionally, cognate status increases the variability of lexical representations in early Spanish-Catalan bilinguals. The results of these experiments have implications for bilingual speech perception and the bilingual mental lexicon, as the results support an interaction between the phonological and lexical levels of representation across the two languages of a bilingual.

Poster presentation abstracts

Michele Burkholder

Laura Sabourin,
& Ayşegül Kutlu

University of Ottawa

Age of acquisition and the bilingual lexicon: Behavioural and neurophysiological approaches

Cross-language masked priming data have contributed to the growing consensus that the bilingual lexicon has a shared semantic system. Currently under debate is how the organization of the bilingual lexicon may differ for different types of bilinguals. Central to this is the translation priming asymmetry, where robust L1-to-L2 priming is found in both lexical decision and semantic categorization tasks, while L2-to-L1 priming is elusive in lexical decision tasks yet robust in semantic categorization tasks. To date, the model that best accounts for this pattern is the Sense ModeI, in which increasing L2 proficiency leads to an attenuation of the asymmetry. The current study focuses on how age of acquisition (AoA), a variable often confounded with L2 proficiency, may actually modulate L2-to-L1 priming in lexical decision tasks, and how models of the bilingual lexicon can account for this.

108 native speakers of English with varying levels of French participated. Both RT and event-related potential (ERP) data were collected. RTs were analyzed using a linear mixed effects model with four groups of participants: Simultaneous, Early and Late Bilinguals, and Functional Monolinguals. Crucially, the Early and Late Bilinguals were matched on L2 proficiency. Results indicated that only the Simultaneous and Early Bilinguals showed translation priming, suggesting that AoA plays a more prominent role in bilingual lexical organization than L2 proficiency. Further, we found that translation priming was correlated with AoA, indicating that this variable is best examined on a continuum. With respect to the Sense Model, we propose that, as AoA increases, it becomes more difficult to incorporate L2 senses of translation equivalents into a joint semantic network that is largely established during L1 acquisition. We expect the ERP data to strengthen these findings and to allow us to make stronger claims regarding the organization of the bilingual lexicon.

Poster presentation abstracts

Naveed Sheikh

& Debra Titone

McGill University

Embodied Semantics: An eye movement study of first and second language sentence reading

The idea that mental processes are grounded in embodied experiences addresses age-old questions about the nature of thought (Barsalou, 1999), and its influence is being felt across all areas of psychology. Recent work on word representation shows that emotional experiences and sensorimotor experiences play foundational roles in grounding abstract and concrete words, respectively (Kousta et al., 2011).

We recently reported that the usual cost of reading abstract vs. concrete words in a first language (L1) was reduced when words had emotionally negative or positive meanings (Sheikh & Titone, 2013). Moreover, the typical concreteness advantage was limited to emotionally neutral words. Thus, processing is faster for words that have semantic representations enriched by embodied emotional and sensorimotor experiences, consistent with idea that feedback from rich semantics facilitates word processing (Zdrazilova & Pexman, 2013).

We now examine second language (L2) readers, for whom semantic feedback should be weaker compared to L1 readers due to reduced L2 experience. A total of 34 L2 participants (French L1) and 43 L1 controls read English words in neutral sentences. Both L1 and L2 readers showed shorter gaze durations for abstract positive words compared to abstract neutral words. However, L2 readers showed no gaze duration advantage for abstract negative words, in contrast with L1 readers. Moreover, while the standard concreteness advantage was limited to neutral words in L1 readers, it occurred for negative and neutral words in L2 readers. Finally, while L1 and L2 readers both showed the standard concreteness advantage, this effect was attenuated for L2 readers with low L2 proficiency. These findings suggest that negative words are grounded in sensorimotor experiences in the L2, unlike the L1, where they are grounded in emotionally negative experiences. Thus, bilinguals capitalize on some but not all embodied experiences to ground L2 semantics.

Poster presentation abstracts

Rachel Klassen

University of Ottawa

Grammatical gender systems in the mental lexicon: Insights from neuter in Spanish-German bilinguals

The representation of L1 and L2 grammatical gender systems in the mental lexicon is currently debated. According to the gender-integrated representation hypothesis (Salamoura & Williams, 2007), L1 and L2 grammatical gender systems are represented as shared gender nodes. In contrast, the gender autonomous representation hypothesis (Costa et al, 2003) maintains that gender nodes are language-specific.

An effect of gender congruency between L1 and L2 nouns has been found in many studies, though some have found the effect to vary by whether gender is borne by an NP or a bare noun and still others have found no effect at all. This study brings new evidence to inform the L2 gender representation debate, addressing the limitations of previous work by investigating gender systems mismatched in number of gender classes (Spanish: 2-class;; German: 3-class) and focusing particularly on the class not present in the L1 (neuter).

19 L1 Spanish-L2 German speakers and 25 L1 German controls performed an L2 picture-naming task, producing a bare noun or NP in German. Stimuli were line drawings of inanimate nouns of the same gender in Spanish and German (congruent), different genders (incongruent) and neuter nouns in German.

The data show an effect of gender congruency for L1 Spanish-L2 German speakers in both naming conditions. Naming latencies were approximately 35 ms shorter for congruent that incongruent nouns. Interestingly, neuter nouns were named faster than gender incongruent ones (bare noun: 76 ms;; NP: 100 ms).

These results support the gender-integrated representation hypothesis of the bilingual's grammatical gender systems, even those that are non-similar. Shorter naming latencies for neuter nouns indicate that the gender not present in the L1 has a unique representation that interferes with the response significantly less than when the incongruency is between genders present in both languages (masculine-feminine mismatches).

Poster presentation abstracts

Henrietta Lempert

University of Toronto

Effect of animacy on L2 verb number agreement in L1 Chinese

First language Chinese (CL1) learners of L2 English seemingly are insensitive to deviant BE agreement in contrasts such as The bridge(s) to the island were ten miles away. We used preamble completion to examine whether CL1s display impaired BE agreement after plural head NPs and whether this is mitigated when animacy is a cue to the agreement controller. Preambles (n = 60) occurred in three animacy combinations (controlled for linking prepositions, frequency, and plausibility); AI (The speaker(s) for the rally/rallies..boring), IA (The trophy/trophies for the singer(s)...shiny), and II (The piano(s) for the wedding(s)...tuned).

CL1 participants were 55 undergraduates at three AoA levels; Early (0 to 10, n = 19), Intermediate (11 to 15, n = 19), and Late (16 to 25, n = 17).

The best–fit mixed-effect logit model revealed fewer number errors in early arrivals (M, 2.02) than intermediate (2.74) or late arrivals (2.81), ps < .001. Separate regressions for AI, IA, and II indicated that AoA significantly predicted errors in IA and II (Early < Intermediate = Late, ps = .01 to < .001; singular heads elicited more errors from early AoAs than plural heads (IA, 1.53 and 1.32; II, 2.10 and 0.89), whereas erroneous agreement was more common after plural than singular heads in intermediate (IA, 2.42 and 1.53; II, 1.89 and 1.63) and late AoAs (IA, 3.25 and 1.24; II, 2.94 and 0.76). But AoA was not a significant predictor in AI (p > .10) and number errors were more common after singular than plural head NPs across AoA (singular and plural, 1.69 and 1.25, p < .001).

The results are interpreted in terms of an additive model of processing complexity which proposes that animate head NPs alleviated pressure on processing resources.

Poster presentation abstracts

Esther Schott

Sabrina Gerth,
& Harald Clahsen

Potsdam Research
Institute for
Multilingualism

Morphological constraints in spoken language comprehension: Evidence from acceptability judgments and eye movements in native and non-native listeners

Inflected words may not freely occur as modifiers inside compounds. In English, native speakers (L1) disprefer regular plurals inside compounds, relative to both singular forms and irregular plurals. Form-level (morphological/phonological) and semantic constraints have been argued to be responsible for these preferences (e.g. Berent & Pinker, 2007; Haskell et al., 2003). In German, -s plurals are banned from occurring inside compounds, whereas all other plurals and the singular form are allowed. Previous studies of the plurals-in-compounds effect in non-native(L2) speakers have yielded mixed results (e.g. Lardiere, 1995; Clahsen, 1995).

The current study compares online and offline performance on plurals-inside-compounds in native speakers of English in their L1 and German learners of English, as well as German native speakers in their L1. Using parallel materials for both languages, participants listened to sentences containing ambiguous compounds ('red peppers eater') while recording their eye movements on pictures showing the two possible interpretations (phrasal/lexical) of these compounds. In an additional experiment, we collected acceptability ratings on compounds containing singular and plural non-heads as well as phonological controls (e.g. rat/rats/mice/ fox/wolf chaser). The online data showed that upon hearing plural relative to singular non-heads, participants looked more towards the picture depicting the phrasal compound interpretation, in both the L1 and the L2 and in English and German, indicating on-line sensitivity to the semantic constraint. However, when English compounds with regular and irregular plurals were directly compared to test for effects of morphological form, significant changes of looks were only found in the L1 group. The offline data, by contrast, yielded parallel results in L1 and L2: reduced ratings for regular plural relative to irregular plural non-heads and no difference for phonological controls (e.g. fox/wolf chaser), indicating that the form-level constraint is morphological (rather than phonological) in nature.

We conclude that advanced L2 learners' offline performance shows native-like sensitivity to the compounding constraints, whereas during online processing they seem to rely less on the morphological constraint than L1 listeners. We interpret this finding along the lines of the shallow-structure hypothesis (Clahsen & Felser, 2006).

Poster presentation abstracts

Zhiyin Renee Dong

& Arild Hestvik

University of Delaware

Processing of past tense and filler gap dependencies by Chinese second language learners of English

The Shallow Structure Hypothesis (SSH) (Clashen & Felser, 2006a, b) claims that the late L2 learners build less hierarchy and fewer abstract details in their syntactic representation, and adopt a categorically different parsing mechanism from the native speakers by relying exclusively on semantic/lexical information to process.

The current study evaluates these claims by examining how Chinese speakers of English process past tense inflection and long-distance Filler Gap (FG) dependency in two experiments with ERP, which reveals whether the nature of the process is syntactic (LAN/P600) or semantic (N400). In the tense study, an auditory version of Newman et al. (2007), Hestvik et al. (under review) was replicated with 29 Chinese speakers of English at intermediate and advanced proficiency levels determined by their Versant English Test (Pearson Plc) scores. They exhibited a LAN response comparable to that of the native speakers for sentences like *Yesterday I eat a banana/ kick a ball", suggesting they recognized the tense mismatch as a morpho-syntactic violation in a native-like way.

In the FG experiment, 56 Chinese subjects at three proficiency levels (intermediate-high, advanced-low and advanced) and in two working memory groups listened to stimuli such as *the hippo that the zebra kissed the dog on the nose ran away. While the native speakers produced a LAN or early anterior negativity followed by a P600 at the offending noun phrase (Hestvik et al., 2007; 2012), the Chinese subjects only generated a sustained N400, suggesting they considered the violation semantic in nature, possibly due to the lack of trace in their syntactic representation.

Such brain responses didn't interact with the proficiency levels or the working memory capacities by ANOVA analyses. We conclude that the L2 learners indeed resort to semantics to process as predicted by the SSH, but only for structures involving abstract elements such as trace.

Poster presentation abstracts

John Drury

Mariia Kaliuzhna,
Hakima Guella,
Anne Cheylus,
& Viviane Deprez

Stony Brook University

Cross-linguistic interference in French/Arabic bilingual gender agreement processing: ERP evidence

In the present ERP reading study French monolinguals and French/Arabic bilinguals viewed simple determiner-noun pairs in French. The determiners were always definite and either appeared in the masculine (le) or feminine (la) form. The subsequent nouns either agreed in gender with the determiner (correct) or not (violation). Half of the nouns in this experiment had Arabic translations that were gender congruent with French (i.e., masculine (/feminine) in both languages) or incongruent (i.e., cases where nouns which are masculine(/feminine) in French are feminine (/masculine) in Arabic). Participants indicated by button press whether the pairs were acceptable or not.

Acceptance rates revealed a Group x Correctness x Congruency interaction that was driven by higher error rates in the Incongruent/Violation condition (10%) for the bilinguals compared to the Congruent/Violation condition (< 5%). In terms of ERPs, other work studying gender (dis)agreement in native speakers of Spanish using determiner-noun word pairs reported a relative negativity (interpreted as an N400 effect), possibly superimposed with an anterior negativity (Barber & Carreiras 2005). Here we found a biphasic negative/positive pattern for violations compared to correct (agreeing) word pairs for the French monolinguals with (as expected) no influence of the factor Congruency. In contrast, the bilinguals demonstrated more narrowly distributed (posterior) negativities for the violation conditions, and, most importantly, also showed interactions of Correctness and Congruency. Intriguingly, unlike the behavioral data, Congruency mainly influenced ERPs for the correct cases (i.e., the agreeing word pairs), with Incongruent nominals demonstrating a broadly distributed positivity with an anterior maximum compared to Congruent ones.

These effects must be understood as a clash between the gender marking on the French determiners (Arabic does not mark gender on the corresponding determiner) and the gender features of the Arabic translations of the French nouns. We discuss these findings relative to models of transfer/interference and cognitive/executive control.

Poster presentation abstracts

Darren Tanner

Eleonora Rossi,
& Janet G. van Hell

University of Illinois

When syntax beats semantics: Electrophysiological measures of cue interaction in L2 sentence comprehension

One recent approach to second language (L2) comprehension claims that individuals prioritize semantic cues, to the exclusion of morphosyntactic cues, when comprehending their L2 (Clahsen & Felser, 2006), and moreover, that this constitutes a fundamental difference with native (L1) comprehension, where syntactic cues should take priority. However, some recent findings from L1 processing show that when semantic and morphosyntactic cues are put in direct competition, even L1 speakers prioritize semantic information (Kim & Osterhout, 2005). An unanswered question therefore is how L2 users weight competing syntactic and semantic information during.

We investigated this by recording event-related potentials while 27 L1 Spanish-L2 English speakers read sentences that were correct ("The broken television was repaired…"), syntactically anomalous ("The broken television was repairs…"), semantically anomalous ("The hearty meal was repairing…") or contained a conflict between syntactic and semantic cues ("The broken television was repairing…"). The anomaly in the final sentence is signaled by the active morphology on the verb: the semantic relationship between the subject noun and verb is felicitous, though the morphosyntax renders the sentence pragmatically implausible. L1 English research has shown a P600-effect in response to the final condition, indicating that the morphosyntactic representation becomes vulnerable to reanalysis in the face of a strong semantic attraction between the subject noun and verb (Kim & Osterhout, 2005). Our L2 speakers showed N400- and P600-effects in the semantic and syntactic conditions, respectively; results in the conflict condition showed only an N400-effect. Not only did our L2 speakers attend to L2 morphosyntactic information, but the strength of the syntactic cue also 'won' over the lexical-semantic cue, leading to vulnerability and reanalysis of the semantic representation. Although this result differs from outcomes in native speakers, it shows that L2 users can prioritize morphosyntactic cues, perhaps to an even greater extent that monolinguals processing their L1.

Poster presentation abstracts

Sabine Burfin

Marc Sato,
Aurélie Campagne,
Christophe Savariaux,
& Sonia Kandel

LPNC, France

Visual speech speeds up the neural processing of phonemes that do not exist in our native language

The present study examined the neural processes that allow us to learn phonemes of languages that do not exist in our phonological repertoire. We are phonologically "deaf" to certain phonemes that are phonetically close to the ones that exist in our language. Recent research indicates that one way to overcome this phonological deafness is to pay attention to the facial movements people produce when they speak. Auditory information alone is sufficient to understand speech of course, but we systematically and unconsciously rely on visual information in face-to-face conversation. This "audiovisual benefit" is most obvious when the speaker is talking in adverse conditions such as a noisy environment. Trying to understand someone talking in a foreign language is like engaging a conversation in adverse conditions. Our studies indicate that when having to deal with a non-native language, visual cues enhance phoneme identification. ERP data indicate that seeing the speaker's face in an audio-visual display affects the neural processing of auditory information on the identity of native phonemes, with a decrease in latency and amplitude of the N1/P2 components. In the present study, we examined whether the audiovisual benefit observed for non-native phonemes could be due to the effects of visual information on neural processing. We presented a voiceless fricative phoneme that exists in French (/f/) and another that does not exist (/θ/) to French monolingual participants. The stimuli were presented audio-visually (AV) and audio-only (A). Preliminary results show that the N1/P2 generated in the AV presentation of /f/ is earlier than the A-only, suggesting that visual cues speed-up the neural processing for known phonemes. For unknown phonemes, we observed a modulation of the amplitude of N1/P2, indicating that the visual cues are not automatically integrated during AV perception.

Poster presentation abstracts

Eliane Segers

Ludo Verhoeven,
Indira Day,
Lianne Hoogeveen,
& Mariska Poelman

Radboud University
Nijmegen

Bias in the assessment of high-ability second language learners

Bilingual gifted children are more difficult to identify as gifted than their monolingual peers. This is especially the case when they are from a cultural minority group who is bilingual. (Potential) excellence in this group is often less quickly identified because of other cultural values, different attitudes from teachers and variations in home (literacy) environment (Worrell & Mello, 2007). Next to lower linguistic capacities in the second language (L2), often a delay is also found in mathematics and non-verbal (figurative) achievement (Lohman, 2005). These three areas are seen as independent in different achievement tests, but there certainly is evidence for a mediating role of language in mathematic achievement (DeHaene, Piazza, Pinel, & Cohen, 2003). This has not yet been investigated in a study comparing high-ability L1 and L2 learners.

In the present study, our first aim was therefore to establish the role of verbal ability in the mathematic and figurative achievement of bilingual gifted children in the Netherlands. We furthermore investigated the role of verbal working memory (Luo, Craik, Moreno, & Bialystok, 2013), and motivation (Subotnik, Olszewsli-Kubilius, & Worrell, 2011) in this relation, as verbal working memory is an important factor in L2 learning, whereas motivation cannot be neglected in research into giftedness. Subjects were 596 high-achieving monolingual and bilingual students who attend pre-university education in their first year after elementary school. Bilingual students scored lower on verbal and mathematical tests, but not on spatial tests. The lower mathematical score disappeared after controlling for verbal ability. Working memory turned out to be a factor with overall importance for all three abilities, whereas for motivation, independence in acquiring knowledge added to verbal abilities. Mathematics cannot be seen as a linguistic-independent measure of intelligence in bilingual children, and both working memory and motivation need to be taken into account in ability testing.

Poster presentation abstracts

Natalie Rangel

María Irene Moyna,
& Verónica Loureiro-
Rodríguez

University of Texas at
Austin

Results of a matched-guise test in two Texas border areas

This study investigates language attitudes towards English, Spanish and code-switching in two Texas border cities (Laredo and Edinburg) by means of a matched guise test. It was found that there were no significant overall differences between attitudes in the two cities. Code-switching received the lowest ratings in all dimensions; English and Spanish were matched for status, and Spanish received the highest scores for solidarity and personal appeal. The main finding was that when the variable of gender was considered (both for raters and speakers), then differences in ratings did emerge, pointing to a complex interplay of the three varieties in mediating gender roles.

To measure attitudes towards Spanish, English, and Spanish/English code-switching, we employed the matched guise test, originally eveloped by Lambert et al. (1960). We prepared Spanish and English versions of an originally Spanish/English code-switched spontaneous speech. Scripts were checked for grammaticality and then recorded by four bilingual speakers (2M, 2F) of Mexican Spanish. Research subjects (96 bilinguals from Laredo and 91 from Edinburg) answered a demographic questionnaire and then listened and rated each voice based on a list of attributes grouped according to dimensions of status, solidarity, and personal appeal.

It was found that in both cities code-switching received the lowest scores for all rating dimensions. Additionally, English and Spanish exhibited no significant differences in the status dimension, but Spanish was ranked higher than English on solidarity and personal appeal. Differences in the evaluation of the varieties by speaker and rater gender suggest that in Edinburg speakers have more tolerance for English and code-switching across genders, but see Spanish as a covert solidarity marker among males. Our findings confirm the long-term positive evaluation of Spanish on the border (Anderson-Mejias, 2005) and show that even in nearby cities with similar language usage, there may be differences in the role languages play in indexing social relations.

Poster presentation abstracts

Xiaoming Jiang

Silke Paulmann,
Jessica Robin,
& Marc Pell

McGill University

Does L2 proficiency facilitate vocal emotion recognition in a non-native language?

How vocal emotion is recognized by individuals from a foreign culture is a matter of question. Using an auditory gating paradigm, we examined how recognition accuracy and efficiency of using acoustic information to identify vocal emotions were influenced by listener's native status in two distinct cultures/languages. Pseudo-utterances encoding five different basic emotions (anger, fear, happiness, sadness and neutral) were vocally portrayed by native male speakers of English and Hindi and were presented to English and Hindi listeners in segments of increasing duration (200, 400, 500, 600, 700 ms, full-length utterance), starting from the onset of the utterance. English listeners were foreign to Hindi while Hindi listeners were second-language learners of English. Although both native and non-native listeners recognized emotions in each language well above chance, non-native listeners showed lower accuracy than native listeners when presented both full or partial utterances and they required more acoustic information (time) to correctly identify emotions ("out-group disadvantage"). For the bilingual Hindi group, the out-group disadvantage was predicted by the listener's spoken language proficiency in English, with higher proficiency yielding a smaller disadvantage. Moreover, the out-group disadvantage affected recognition of different emotions in each target language: differences were noted for anger, fear and sadness in English but for happiness and neutral in Hindi. Interestingly, emotion-specific patterns reflecting the accuracy and time course for identifying vocal expressions in each target language were qualitatively similar for native and non-native listeners, that is, listeners did not appear to decode non-native emotion expressions using acoustic models appropriate to their native language. These findings are consistent with the Dialect Theory of emotion recognition, suggesting that emotion comprehension in vocal speech is shaped by both native-ness and acoustic information specific to encode different types of emotion in the native language.

Poster presentation abstracts

Tali Bitan

Michael Nevat,
Qamar Daher,
& Karin Levenberg

University of Haifa

Effects of age and sleep on learning morphological inflections in an artificial language

Learning of a second language has been suggested to rely more strongly on procedural learning in children compared to adults. Adults' performance on procedural learning tasks improves after the end of training, depending on sleep, while children do not benefit from sleep. For declarative learning tasks sleep may prevent deterioration of performance.

We examined differences between adults and children in the consolidation of linguistic knowledge after the end of training using plural inflections in an artificial language. 34 Adults and 36 children (9-10yrs) received one session of training on new words and their plural inflections, which varied in frequency. Their performance was tested immediately after training as well as after 12 and 24 hours. In each age group half of the participants were trained in the morning and the other half were trained in the evening. Our results show that children's performance improved during the 12 hours period immediately after the end of training, regardless of sleep, while adults did not show any improvement. However, for adults sleep provided protection against the decay inflicted by time awake for the high frequency inflection. Moreover, for the generalization of the acquired knowledge to new words adults show a sleep dependent increase in the reliance on phono-logical cues after the end of training.

Our results are consistent with the notion that children are less susceptible to interference during wakefulness, and generalizes it to the language domain. Our results also suggest that when learning new linguistic skills children rely more on procedural learning mechanism compared to adults.

Poster presentation abstracts

Aruna Sudarshan

& Shari Baum

McGill University

Bilingual lexical selection in aging: An individual differences in executive functions perspective

Background: The ability to control interference from a non-target language may be particularly challenging for bilingual older adults given an age-associated decline in cognition. However, benefits in executive functions (EF) conferred by life-long bilingualism may protect against age-related difficulties in language skills (1). Here, we sought to investigate cognate and non-cognate word processing distinctions in younger and older bilinguals. We examined whether individual differences in domain-general executive control modulate cross-language interference resolution in both younger and older adults and if older adults show greater difficulty in resolving cross-language competition compared to younger adults.

Methods: In a picture-word interference paradigm, French-English bilingual younger and older adults named cognate and non-cognate pictures in English while ignoring within- and cross-language auditory distractor words (at varying SOAs). The distractors exhibited three different relations to the cognate target picture (Cactus): semantic (Thorn or Épine), phonological (Canvas or Cahier (notebook)) and unrelated control (Soap or Meuble (furniture)). An additional target-distractor relation was included for the non-cognate target pictures: phonological relation to the translation (Chameau) of the target (Camel) – (Shirt or Chapeau (hat)). Further, to evaluate whether inhibition of lexical competition is modulated by individual differences in domain general executive control, a battery of EF tests was administered.

Results: Our preliminary results correspond with previous findings of picture word interference effects in both younger and older adults. Pictures with cognate names were named faster than pictures with non-cognate names across SOA and distractor conditions. Additionally, both groups demonstrated greater within-language semantic interference and phonological facilitation effects and marginal between-language effects. Of note, for our hypothesis regarding domain-general executive control, increased inhibition of lexical competition was significantly predicted by enhanced EF measures across both groups. Further, as expected, older adults had more difficulty suppressing cross-language competitors than did younger adults, attributable to differences in performance on EF measures.

Poster presentation abstracts

Susan Sayehli

Developmental perspectives on transfer

Lund University

The aim of this paper is to examine how learner-general developmental trajectories in word order interact with a language-specific factor, the influence of—or transfer from—the language learner's first (L1) or previously learned second (L2) language on the acquisition of a third language (L3). It thereby aims to bring together two lines of research whose main concepts—transfer and developmental trajectories—have often been studied in separate lines of research. The results obtained are discussed in the light of several transfer hypotheses for multilingual contexts (e.g., Bardel & Falk, 2007; Hakansson, Pienemann, & Sayehli, 2002; Flynn, Foley, & Vinnitskaya, 2004; Rothman, 2011). The study examines the acquisition of L3 German by native speakers of Swedish with English as their L2 (n = 61). A developmental perspective was taken by testing participants of different proficiencies quasi-longitudinally on syntactic structures representing developmental stages of L2/L3 German. Additionally structures mirroring those of the participants' L1 or L2 were tested. Participants completed a battery of tasks that yielded elicited imitation data and spontaneous speech data. The results suggested that elicited imitation data overestimated the learners' proficiency: participants were able to imitate structures that they were not able to produce spontaneously, but never vice versa. It is therefore assumed that learners are able to imitate structures that they cannot yet produce but are on the verge of acquiring (cf. Schimke, 2011). Further, the results of both data sets suggested that learners follow general developmental trajectories. These trajectories did not seem to be susceptible to modification by structural similarity between the participants' L1 or L2 and their target L3. Hence, it is concluded that developmental trajectories constrain L1 or L2 transfer effects.

Poster presentation abstracts

Justin Koh

Heather Goad,
Audrey Delcenserie,
& Fred Genesee

McGill University

Atypical word-level prominence in internationally-adopted French-speaking children

Internationally-adopted (IA) French-speaking children score significantly lower on measures of receptive grammar, expressive vocabulary, and sentence recall than monolingual age-matched native speakers. Abrupt disruption in birth language acquisition, delayed onset of French acquisition, or both may be responsible ([2], [3]). Previous studies have not examined phonological aspects of IA children's productions. However, when native French speakers listen to speech samples of IA children, they judge their prominence systems to 'sound' non-native-like.

In this poster, we examine prominence in five IA children tested at ages 7-8. Production data elicited through a storytelling task were phonetically transcribed and acoustically analyzed in Praat ([1]). Phrases containing a determiner, prenominal adjective and noun were analyzed; phrases of this type typically contain only one position of prominence in adult French (experimentally confirmed by [5]), on the final syllable of the rightmost lexical word:
(1) le petit garçon   'the little boy'
In contrast to (1), all five IA children produce stress on every lexical word, (2). A subset also produces stress on determiners, (3). Further evidence supporting word-level prominence is the absence of schwa deletion, commonly attested in unstressed syllables in the native speakers' productions (le ptit garçon).
(2) le pétit garçón/le petít garçón
(3) lé pétit garçón/lé petít garçón

Young non-adopted learners of Quebec French also produce word-level, not phrase-level prominence in their early grammars, yet these non-target forms disappear by age 4 ([4]). Thus, the word-level prominence exhibited by these older IA children is unexpected. We present two hypotheses for the patterns observed: a) IA children exhibit protracted development of French prominence; b) IA children's birth language, Mandarin, which contains word-level prominence, continues to have an effect on their productions. Our findings highlight the unique linguistic context of IA children, and may enable specific pedagogical resources to be developed for this population.

Poster presentation abstracts

Caitlin Ting

& Janet van Hell

Pennsylvania State University

Individual differences in within- and across-language homograph processing

Homographs are words that share form, but not meaning. Research on bilingual homograph processing in the second language has found interference, where across-language homographs are recognized slower than unambiguous control words. Research on lexical ambiguity in monolingual word recognition showed both interference and facilitation, depending on the overlap between a homograph's meanings. Thus, it appears that homograph recognition depends on not only whether a homograph has more than one meaning, but also whether a homograph's meanings are related or not.

To date, little research has examined whether within- and across-language homograph processing rely on the same underlying mechanisms. The present study explores across- and within-language homograph processing in bilinguals and within-language homograph processing in monolinguals, and whether these processes are similarly influenced by measures of working memory, inhibition, and language proficiency. Twenty-two English-Spanish bilinguals and twenty-six English monolinguals completed generalized and English-specific lexical decision tasks, a non-linguistic task-switching task, and a battery of individual differences measures. Correlation and regression analyses were conducted to determine the relationship between cognitive and linguistic individual differences and within- and across-language homograph effects, as well as the influence of speaker type on homograph processing.

Results show that only in bilinguals a higher magnitude of the intralingual homograph effect in the English and the generalized lexical decision tasks is related to lower inhibitory control, as measured with the Flanker task. In the bilinguals but not in the monolinguals, a greater intralingual homograph effect in the generalized lexical decision task co-occurred with a greater switch effect in the task-switching task. These data add to recent research on cognitive mechanism(s) used in linguistic and non-linguistic conflict. Thus, it appears that the underlying mechanisms of homograph processing differ between bilinguals and monolinguals, with bilinguals relying on a unique relationship between non-linguistic control and homograph processing.

Poster presentation abstracts

Yu-Cheng Lin

Ana Schwartz

University of Texas at El Paso

Deos the bilignual mnid raed the wrods as a whloe?

Monolingual research demonstrates that lexical access is flexible in terms of letter-position; Transposed-letter (TL) nonwords (jugde) prime recognition of their base words (judge) stronger than orthographic controls (jutpe). In two experiments we examined whether TL priming would be observed across languages and whether the magnitude of priming would vary according to cross-language form overlap. Spanish-English bilinguals performed a lexical decision on either noncognate targets, cognate targets with high orthographic overlap (actor/actor: +o) or cognates with lower orthographic overlap (fruit/fruta: -o). In Experiment 1, there was significant TL priming in response latency across all cognate and noncognate conditions. Priming in accuracy was only observed for +o cognates. In Experiment 2, the TL primes were followed by targets that were semantic associates of the TL base word (e.g., atcor: MOVIE). In that experiment there was only a facilitative effect for +o cognate in both latency and error rates.

Poster presentation abstracts

Alejandro Martínez

& Elena Salillas

BCBL, Spain

Code switching for math in bilinguals: An ERP study

Bilinguals show a preference for one of their languages (Spelke and Tsivkinm, 2001; Salillas and Wicha, 2012; Bernardo 2002) in their arithmetic representations and arithmetic learning, even when they are fully proficient balanced bilinguals. This raises the question of whether the pattern of dominance for math and the subsequent cost associated to language switches could run separately for math and natural language. It is hypothesized that the dominant language for math is the Language of Learning Math (LLmath), vs. the other language (OL). The present ERP study tested a group of Spanish-Basque balanced bilinguals. For half of them, their L1 was also their LLmath, and for the other half, the L2 was the same as their LLmath. EEG was recorded when participants classified numbers as bigger than, or smaller than 6. Numbers were presented in their written form, and they were presented following another number in four different conditions, two non-switch conditions: LM non-switch, OL non-switch; and two switch conditions: switch from LM to OL and from OL to LM. Results show that switch cost at the N400 component was bigger in the OL to LM switch, as predicted by BIA+ model but independently of L1 and L2 dominance. In turn, balanced bilinguals show unbalanced dominance for the linguistic codes for math.

Poster presentation abstracts

Stefanie Nickels

YanJing Wu,
Guillaume Thierry,
& Karsten Steinhauer

McGill University

Effects of prosodic background and proficiency on syntactic processing in L2: ERP evidence from German and Chinese learners of English

While a number of studies have investigated the integration of syntactic and prosodic information in monolinguals, little is known about this process in bilinguals. Using event-related potentials (ERPs) we compared languages differing considerably in their prosodic organization to test (a) whether L2 learners process prosodic cues in the same way as native speakers and (b) how different prosodic backgrounds and proficiency levels influence syntactic parsing in L2.

To address this we investigated native English listeners, high proficiency (HP) German, low proficiency (LP) Chinese, and HP Chinese learners of English with an acceptability rating paradigm in four conditions. In conditions A and B, syntactic boundaries were correctly marked by prosodic boundaries at which all four groups elicited a CPS (Closure Positive Shift). In condition C, the omission of a disambiguating boundary led to a P600 garden-path effect in the English, HP German and HP Chinese group, but not in the LP Chinese speakers. Condition D contained a superfluous boundary resulting in a strong biphasic N400-P600 garden-path response in the L1 and the German group, where the LP Chinese group only demonstrated an N400, and the HP Chinese group only exhibited a P600.

We conclude that (a) prosodic boundaries are processed in a similar way but (b) both prosodic background and L2 proficiency shape prosody-syntax integration in L2. Even at high proficiency levels, speakers of Chinese – a tonal language differing strongly from English – showed only partially similar patterns compared to native speakers, while the German group using a similar prosodic system elicited comparable ERPs.

This work is also of relevance to the debate about whether late L2 learners can show native-like neurocognitive markers. While differing prosodic backgrounds seem to be an additional hurdle for L2 speakers, we predict that once native-like proficiency has been established in L2, even those groups with a distant prosodic background, will converge on the L1 ERP pattern.

Poster presentation abstracts

Shukhan Ng

& Nicole Wicha

University of Texas
at San Antonio

Timing is everything in the bilingual brain: Dissecting the time course of lexical access using a novel target detection paradigm

Introduction. Many bilingual models assume meaning retrieval is the last stage in lexical access. In the present study, we employed ERPs to investigate the time course of retrieving semantic and language membership (i.e., what language a word is in) information in words from two languages. Additionally, we examined the effect of language proficiency and frequency of language use on the timing.

Methods. Adult Spanish-English bilinguals read a list of mixed words from the two languages and responded by button press upon detecting words that referred to people in only one of the languages (e.g., maid). All bilinguals performed the task with English and panish as the target language across separate blocks. We used a target-detection paradigm and measured the P300 component from word onset. Significant differences in P300 amplitude across conditions was considered the point at which words were classified as targets or non-targets.

Results. In Experiment 1, balanced bilinguals (N=24) accessed language membership earlier than meaning in English but meaning earlier than language membership in Spanish. In Experiment 2, bilinguals (N=54) were divided into 3 groups: balanced bilinguals who used English more often (BB-En) or Spanish more often (BB-Sp), and Spanish-dominant bilinguals who use both languages equally (Dom-Sp). The results indicated that BB-En obtained language membership earlier than meaning in English but meaning earlier than language membership in Spanish. BB-Sp showed the opposite pattern. Dom-Sp accessed semantic information earlier regardless of the target language.

Conclusion. Access to word meaning happens by 250ms and is unaffected by language proficiency and use. However, the relative timing of access to language membership and meaning varies with language use frequency. Contrary to predictions of visual word recognition models, bilinguals appear to use meaning before language membership, e.g., form-level information, except when one language is used more frequently than the other.

Poster presentation abstracts

Michael Tyler

& Fabien Elysee-Collen

University of Western Sydney

Early-sequential bilinguals' recognition of L1-foreign-accented words

Bilinguals are faced with the task of accommodating first- (L1) and second-language (L2) phonemes that may be distinct, partially overlap, or occupy the same region of phonetic space. According to the Speech Learning Model (Flege, 1995), learners could either develop new L2 perceptual categories or establish shared L1/L2 categories. The Perceptual Assimilation Model of Second Language Speech Learning (PAM-L2; Best & Tyler, 2007), conversely, allows for common L1-L2 phonological categories, with language-specific phonetic categories. For example, a common French-English /b/ category would respond to French [b] and English [p]. If early sequential bilinguals have established such categories, then they may show an advantage over monolinguals when recognizing L2 words spoken with a foreign accent of the L1. We tested this possibility by presenting English words spoken in an Australian or French accent to: 1) French-English early-sequential bilinguals; 2) monolinguals with long-term exposure to French-accented English, and; 3) monolinguals with limited exposure. Items consisted of phonetically congruent words, which were perceived as the intended word by monolinguals when spoken in a French accent (e.g., BIN), phonetically incongruent words, which were perceived as a different word (e.g., French-accented BEEN sounds like BIN), and filler items. On a given trial participants listened to an English word (e.g., BEAN) and selected its written form from among three distractors (e.g., BIN, BUN, BORN). Although the French-exposed monolinguals recognized French-accented incongruent words more accurately than the unexposed group, the French-English bilinguals far outperformed both groups. Furthermore, French-English bilinguals had shorter reaction times than both monolingual groups on French-accented filler words, but the groups did not differ on recognition of the English-accented words. The results support the PAM-L2 idea that the bilinguals' early French and English exposure has resulted in common L1-L2 phonological categories that are sensitive to both French and English phonetic categories.

Poster presentation abstracts

Tokiko Okuma

McGill University

The development in interpreting Japanese pronouns by adult bilingual speakers

This study investigates the applicability of the Interface Hypothesis (henceforth IH, Tsimpli & Sorace 2006) through the acquisition of two different domains of knowledge of pronouns by L1 English speakers of L2 Japanese. The IH suggests that external interfaces, such as the discourse-syntax interface, are persistently problematic for L2ers because of their limited processing resources, while other domains of knowledge are not problematic.

This study focuses on two functions of Japanese pronouns. The first function is related to discourse. In Romance pro-drop languages, null pronouns denote topic continuity, while overt pronouns denote topic change (Belletti, Bennati & Sorace 2007). Similarly, in the topic drop language, Japanese, null pronouns express topic continuity, while overt pronouns do not (Okuma 2011). The second function is related to semantics/syntax. Japanese overt pronouns cannot be bound by a quantificational antecedent, regardless of their syntactic positions (Saito & Hoji 1983, Montalbetti 1984, Elbourne 2005), due to their nature as N-pronouns (Noguchi 1997). English does not allow null pronouns; accordingly, English pronouns do not have these two functions.

The experiment was conducted on intermediate/advanced L1 English speakers of Japanese, who had started learning Japanese after puberty (n=15) and native Japanese speakers (n=15) as the control group, and their knowledge of pronouns was compared. The experiment consisted of a picture verification task adapted from Okuma (2011) and an interpretation task adapted from Kanno (1997). The results so far do not show asymmetry of the knowledge of the two functions. The L2ers did not differ significantly from the controls in interpreting pronouns in the two tasks. This suggests that the discourse-syntax interface is not a predetermined domain for fossilization, challenging the IH. Instead, this study supports the view that interfaces should not be treated holistically (White 2011).

Poster presentation abstracts

Hermas Abdelkader

Université Ibn Zohr

The relative complementizer in L3 English: L1-L2 transfer effects and feature reassembly

This study investigated the acquisition of the restrictive relative clause by L1 Arabic-L2 French adults learning L3 English in the pre-intermediate and advanced levels. The focus was on definite and indefinite, subject and object relatives. The language combination was L1≠L2=L3. Two objectives were set: the source and nature of crosslinguistic influence in L3 acquisition and the validity of Lardiere's feature reassembly account of adult L2 acquisition for the acquisition of the L3. The results of an acceptability judgment test indicated that the L3 pre-intermediate learners progressed on definite and indefinite relatives with a lexical complementizer but not on indefinite relatives with a null complementizer. We supported that simultaneous multilingual transfer in the form of facilitative L2 and non-facilitative L1 influence accounted for their performance in L3 English. As for the advanced L3 learners, we maintained that they successfully reassembled the morphosyntactic feature matrix of the relative head C while they had some learning difficulty with the (in)-definiteness of the head nominal of the relative clause. Taking the L3 learners' performances together, we claimed that the feature matrix of C gradually developed from an L1-L2 hybrid bundle [EPP, ±def, −wh] at the pre-intermediate L3 level before it was properly reconfigured into the target [EPP, −wh] at the L3 advanced level. This extends Lardiere's feature reassembly account to L3 acquisition.

Poster presentation abstracts

François-Xavier Brajot

McGill University

Articulatory phonetics in simultaneous bilingual speakers: Cross-linguistic convergence on static measures vs. divergence on dynamic measures

This study was conducted to identify possible language-specific differences between French and English coronal plosive articulation, and to determine whether any differences retained similar spatio-temporal characteristics among bilingual speakers. Electromagnetic articulographic recordings of single-word productions were carried out on three groups of female Canadian speakers (French monolingual, English monolingual, French-English simultaneous bilingual). Word-initial coronal plosive tokens were analyzed acoustically with respect to spectral moment, formant transition and formant values at vowel mid-point. Articulatory analyses included tongue tip place of articulation, interpolated tongue shape and dynamic parametrization of tongue tip movement throughout the plosive release. Acoustic and static articulatory measures were effective for differentiating monolingual speakers according to language. This was not the case for simultaneous bilingual speakers, on the other hand, who demonstrated significant cross-linguistic overlap (phonetic convergence). Language-specific patterns were retained in dynamic articulatory measures among bilingual speakers, however. These fmdings suggest that static speech parameters may be manipulated to permit greater flexibility for multilingual speech production, whereas dynamic parameters may index more fundamental, language-obligatory aspects.

Poster presentation abstracts

Dominique Bédard

Alexandra Marquis,
Phaedra Royle,
Laura Gonnerman,
& Susan Rvachew

Université de Montréal

Comparing oral and written morphosyntax between monolingual and multilingual children: A longitudinal study

It is notoriously difficult to learn to write in French due to morphological systems (gender and number) that are not orthographically or phonologically transparent. Moreover, many children in the Montreal area have not been exposed to French before entering the school system. The current longitudinal study presents data from French oral morphosyntax (past tense production) at year one (first grade) and written morphosyntax (multiple choice task: Paul a/*as/*à une amie 'Paul has/have/at a friend') at year two. We compared multilingual children (MUL) learning French as a second or third language and French-speaking monolingual children (ML), and studied the possible correlations between the tasks. Based on previous research, we expected a significant difference between ML and MUL children for the oral task, and no difference for the written task. We also expected to observe positive correlations between the two tasks.

For the oral task ML children produced verbs more accurately (80%) than MUL children (66%), p =.01. For the written task, no significant difference was found between groups (L1 85%, L2 86%, p = n.s.). In addition, a significant correlation between the oral and written tasks was observed (r = 0.28, p = .01).

Results in the oral task suggest that French-speaking monolingual children benefit from their exposure to French since birth. In the case of written language, both groups benefit similarly from equal amounts of exposure to explicit teaching. This confronts received wisdom that bilingualism delays learning complex aspects of language such as morphosyntax.
This study helps us better understand children's acquisition of French as a second language and highlights the importance of evaluating both oral and written skills with tests that are standardized with multilingual and monolingual children.

Poster presentation abstracts

Audrey Delcenserie

& Fred Genesee

McGill University

Language and memory abilities of internationally-adopted children from China

Internationally-adopted (IA) children experience abrupt termination in L1 acquisition and delayed onset in acquisition of their new language at a time when the neuro-cognitive substrates for language learning are becoming fine-tuned, two important risk factors for language acquisition. Indeed, recent longitudinal research has shown that, in comparison to non-adopted children matched on socioeconomic status (SES), IA children from China adopted by French-speaking families before 24 months of age and assessed repeatedly between 2 and 8 years of age exhibited normal cognitive and socio-emotional development, but had significantly lower scores on vocabulary, grammar, and sentence recall (Delcenserie, Genesee, & Gauthier, in press; Gauthier & Genesee, 2011). The present study examined whether these lags would resolve with greater exposure to French and if IA children exhibit difficulties with memory. Thirty French-speaking Chinese adoptees (9;0-12;5 years of age) were assessed and compared to 30 monolingual non-adopted control children (CTL) matched for age, gender, and SES using a battery of tests of cognitive and socio-emotional development as well as language and memory abilities. The groups did not differ on non-verbal IQ, socio-emotional development, non-verbal short-term (STM), and working memory (WM), but the IA children scored significantly lower than the CTLs on vocabulary, grammar, fluency, verbal STM, WM, and long-term memory. These results indicated that the IA children continued to exhibit significant lags in language, indicating that their language difficulties did not decrease with more exposure to French. They also exhibited significant lags in verbal but not non-verbal memory, suggesting that their memory difficulties are specific to verbal material. Regression analyses revealed further that IA children's language scores were best predicted by their verbal STM abilities. We hypothesize that IA children's delayed exposure to the adopted language and/or attrition of the birth language may result in long-term verbal memory lags, which underlie their language lags.

Poster presentation abstracts

Maria Fionda

University of
Mississippi

The role of executive function in L2 word order processing

One aspect of research in second language (L2) acquisition considers the role of cognitive abilities, namely individual differences in mental capacity, in language processing (Doughty & Long, 2007). The present study seeks to further our understanding of the relationship between one general cognitive system, Executive Function (EF), and Spanish L2 online processing of clitic pronoun placement errors in the object clitic + finite verb construction involving the pronouns lo, la, los, las, le and les.

EF is a complex neuropsychological construct whose definition includes the notion of mental flexibility, the ability to filter interfering information, as well as practice goal-directed behaviours (Ardila, 2008). While there is considerable research regarding the role of EF in native language processing (e.g., Biegler, Crowther & Martin, 2008; Ye & Zhou, 2009), little is known about the relationship between EF and adult L2 processing (e.g., Bialystok & Feng, 2009; Hernandez & Meschyan, 2006), particularly that of morphosyntax.

Specifically, then, this study examines whether individual differences in EF abilities predict native English learners' perception of Spanish clitic placement errors when the erroneous word order mirrors English syntax. Crucially, English does not have a system equivalent to that of the Spanish clitic pronouns, as they differ both in grammatical category and syntax.

Participants were 29 intermediate-level L2 Spanish learners who took part in two EF abilities tests (Stroop and Trails Making) and an eye tracking experiment that measured their reading processing of clitic placement in Spanish. The results of logistic regression analyses show predictions that suggest that lower EF abilities translate into delayed integration of information and clitic placement error detection. The findings are discussed in terms of the relationship between general cognition, L2 online processing and acquisition.

Poster presentation abstracts

Soo-Ok Kweon

David Tromblee,
& John Drury

Stony Brook University

L1/L2 influence on visual attention in the perception of motion events

Languages vary in how motion events are encoded. In MANNER-oriented languages (English), MANNER of motion is proto-typically encoded via the main verb while PATH information is usually realized via modifiers (e.g., "He is skating (MANNER) to the hockey net (PATH)"). In PATH-oriented languages (Greek, Korean) the relative prominence of PATH/MANNER information is reversed. Eye-tracking data suggests that the way motion events are encoded in one's native language can influence visual attention in the perception of motion events, but that such effects appear to index the optional recruitment of linguistic encoding mechanisms in ways that are contingent on task demands. English and Greek native speakers are more likely to attend early on to those features of short animations of motion events which their language encodes more prominently. However, this language-specific influence only manifested when participants had to overtly describe the events and not when the task was simply to remember the animations for a latter memory test. The present study investigated how such cross-linguistic differences may influence visual attention in sequential Korean/English bilinguals where the L1 is PATH-oriented (Korean) and the L2 is MANNER-oriented (English). English-L1 monolinguals and Korean-L1/English-L2 sequential bilinguals viewed short animations of motion events and were instructed either to simply view the motion event animations for a later memory test (Non-Linguistic/NL task) or to describe the animations (Linguistic/L task). Among a range of behavioral/eye-tracking results that were largely consistent with previous work, we also found that when Korean-L1/English-L2 bilinguals were required to describe the motion events in English they showed an early relative increase in their PATH relative to MANNER fixations, consistent with an L1-based linguistic encoding strategy which we suggest arises to meet the demands of planning utterances in the later learned, less proficient language.

Poster presentation abstracts

Zhamilya Yerimbetova

& Catherine Caldwell-Harris

Boston University

"Because there was no other way": The effect of motivational drives on later language learning

The literature on age effects in second language acquisition paints a dire picture of L2 ossification for learners who begin post puberty, even for immigrants who have the potential of immersion conditions. Those who immigrate in middle age are portrayed as making minimal progress and remaining in ethnic enclaves where they use their L1 with friends and family members. This picture has been countered in the last decade by work on exceptional learners, meaning those who could pass as native speakers despite learning after the teen years. In those cases, high levels of integrative motivation appear to be the most important factor in explaining unusual L2 attainment. Extending this research paradigm, we investigated factors that can explain better-than-normal acquisition of L2 for middle-aged adults.

We interviewed L1 Russian immigrants to the U.S. who achieved good English proficiency despite immigrating after age 40 with little prior English. We administered personality scales and a test of written English ability. Similar to studies on exceptional learners, our middle-age learners had high need for cognition, openness to new experience, extraversion, high empathy, and successful acculturation. But what stood out in the interviews was the presence of a special personal situation that required proficient English. One of the participants needed to learn English to interact with U.S. doctors in charge of treating a complicated illness. Another participant, a successful doctor in the country of origin who immigrated due to religious beliefs, described the "need to maintain professional status." On this analysis, motivation related to maintaining a desired quality of life appears to be decisive for explaining attainment of fluent English abilities after young adulthood. Our findings are inconsistent with strict interpretations of the critical period and illustrate resiliency in the language acquisition system.

Poster presentation abstracts

Robert Reinecke

& Krista Byers-Heinlein

Concordia University

Where is la grenouille? Parental language mixing with bilingual infants: A more than common behaviour

For children growing up bilingual, input might come from either monolingual or bilingual speakers, and each of these types of environments could have implications for acquisition. The one-parent-one language approach is often assumed to be a common and successful strategy for raising bilingual children (i.e. Dopke, 1992). However, this strategy may not accurately describe the majority of daily parent-infant interaction. A linguistically diverse sample of parents in Vancouver reported frequently mixing their languages interactions with their bilingual children, using more than one language in the same sentence (Byers-Heinlein, 2013). The current study extended these results to French-English bilingual children in Montreal, to determine whether parental language mixing is also common in this linguistically homogeneous population, and if so when it mainly occurs. The primary caregiver of 88 bilingual infants (age range 1;7:10 — 2;3:27) completed the five-item self-report Language Mixing Scale (Byers-Heinlein, 2013) which asks about code-mixing, borrowing, and general language mixing, to yield a total scale score from zero (never mix languages) to 30 (frequently mix languages). On average, parents reported a moderate amount of language mixing (M = 10.55, SD = 8.30). Seventy-three percent of all parents reported borrowing a word from the other language in at least one occasion when speaking to their child. However, specific mixing behaviours appeared to be partially dependent on situational factors. In general, parents reported borrowing a word from their dominant language more often when speaking the non-dominant language than vice versa. However, when teaching new words, the opposite pattern was observed, whereby parents reported borrowing a word from their non- dominant language more often than vice versa. These results suggest that one-parent-one¬ language does not accurately describe the majority of daily parent-infant interactions, and that bilingual parents' language mixing is a dynamic behaviour influenced both by their language dominance and by the situation.

Poster presentation abstracts

Tim Poepsel

& Daniel Weiss

Pennsylvania State
University

The consequences of bilingualism for statistical word learning

Over the last two decades, studies of statistical learning have been influential in thinking about early language acquisition. To date, however, very few studies have focused on how statistical learning may be impacted by the experience of tracking more than one language, as in the case of bilingual acquisition. Preliminary evidence suggests that expectations about monolinguals and bilinguals may treat variability in the input differently. For example, Kovacs and Mehler (2009) reported that bilingual infants are able to follow two rules, whereas monolingual infants track only one, unless they have access to a contextual cue to mark the transition between structures. A possible conclusion from this study is that bilingual learners more readily accommodate the presence of multiple inputs relative to monolinguals. Consequently, the present study explores how experience with multiple languages may influence the learning of multiple mappings by testing English monolinguals and Chinese-English bilinguals using a modified cross-situational statistical word-learning (CSSL) paradigm. In the basic CSSL paradigm, learners view a series of trials containing an array of objects and hear their labels concurrently presented in a random order; learners can map words to objects by tracking the co-occurrence frequency of objects and labels across trials. Here we familiarized learners to a series of objects that contained both single word (1:1) and multiple word (2:1) mappings. We presented learners with three training phases containing the same set of 1:1 and 2:1 word-object mappings, and tested learners after each phase. We found no differences between monolinguals and bilinguals in the learning of 1:1 mappings. However, bilinguals acquired a greater number of 2:1 mappings over the course of the experiment, and learned these mappings significantly faster than monolinguals. These results support the hypothesis that during statistical learning, bilinguals may more readily accommodate new structures in the input.

Poster presentation abstracts

Courtney Johnson Fowler

& Carrie Jackson

Pennsylvania State University

What role does grammatical gender play during L2 sentence processing?

Though L1 speakers rely on grammatical gender cues to help them anticipate upcoming words, L2 speakers are not as sensitive to these cues (e.g., Lew-Williams & Fernald, 2010; Scherag et al., 2004). However, recent studies demonstrate that some L2 speakers can process gender cues online (e.g., Hopp, 2013; Morgan-Short et al., 2010). The present study uses a visual priming paradigm to test L1 German speakers and advanced L1 English-L2 German speakers to see whether, with gender priming, L2 speakers can use gender markings similarly to native speakers during online processing.

During experimental trials, participants saw a prime with two images, which were manipulated for gender congruency (e.g., Tisch.MASC/Stuhl.MASC [table/chair] or Tisch.MASC/Dusche. FEM [table/shower]) and color congruency (e.g., a brown table paired with either a brown or a green chair). Under each image a gender-marked description was given (e.g., ein brauner Tisch [a brown table]). Following the prime, participants saw a sentence in word-by¬word format (e.g., Hier ist der braune- [Here is the brown-]) followed immediately by one of the original two images and participants had to name the picture.

Results showed that L1 speakers were able to use both the semantic cues (i.e., color) and the gender cues to facilitate processing and name the final image faster. L2 speakers were able to use gender cues, although their ability to do so was modulated by overall proficiency and accuracy on an additional gender assignment task. In contrast to the L1 speakers, L2 speakers did not make use of the semantic cues. These findings contribute to the literature that shows that the ability to use grammatical gender cues during online processing is indeed possible for L2 speakers.

Poster presentation abstracts

Irina Sekerina

Luca Campanelli

CUNY College
of Staten Island

Real-time processing of gender and number agreement by heritage Russian speakers

In the Visual World eye-tracking experiment, bilingual heritage Russian-English participants' eye movements were recorded as they viewed 30 displays with 4 pictures, listened to (1)-(2) and clicked on the picture that matched the spoken sentence. The gender of the Target noun (masc vs. fem) was crossed with referential ambiguity of the display (UNAMB vs. AMB). The 5th (Plural) condition used the noun in plural without gender (2). The inverse word order Locative-V-Adj-N ensured that the prenominal number and gender agreement markers were available twice (on V and Adj) in all conditions and prior to the Target, but their first occurrence was —600 ms earlier in the PL and UNAMB conditions. We predicted the following hierarchy in processing of number and gender markers: PL = Fem/Masc-UMABG > Fem/Masc AMB, with PL and gender UNAMB markers leading to anticipatory eye movements to the Target prior to its appearance in speech.

The monolinguals were more accurate, faster and more efficient in taking advantage of the grammatical agreement markers in predicting the Target than the heritage speakers. But the pattern of processing of number and gender in eye movements was different between as well as within the two groups. The PL marker on Verb was effective for both groups, but Fem-UNAMB had weaker predictive effects than expected. Masc-UNAMB was informative for the monolinguals but not for the heritage speakers. These results can be explained as (1) the strength of the universal (number) vs. language-specific (gender) cues (Carminati, 2005); (2) differential marker recognition, Fem vs. Masc (Kroff et al., 2010, and (3) a stronger detrimental effect of perceptual salience of the PL and Fem markers vs. zero Masc marker for the heritage speakers (Salt et al., 2004). A significantly longer competition in the AMB conditions and longer RTs are evidence for lack of automaticity in bilingual heritage processing.

```
(1) FEM:  Po nebu letela                          serebristaja       ptica.
          In  sky     was flyingFem-Sg            silverFem-Sg       birdFem-Sg
    MASC: Po nebu letel                           serebristyi        samolet.
          In  sky     was flyingMasc-Sg  silverMasc-Sg       planeMasc-Sg
(2) PL:   Po nebu leteli                          serebristye        oblaka.
          In  sky     were flyingPl              silverPl           cloudsPl
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Poster presentation abstracts

Rhonda McClain

Eleonora Rossi,
& Judith Kroll

Pennsylvania State
University

Using ERPs to investigate the scope and time course of inhibitory control in bilingual production

The current study used event-related potentials (ERPs) in an extended blocked picture naming paradigm to investigate inhibitory control in bilingual speech production. Previous research has shown that the bilingual's two languages are activated whenever they plan to speak, even in a context that requires one language only (e.g., Costa, 2005). Despite the evidence for parallel activation during speech planning, bilinguals rarely make intrusions from the unintended language (e.g., Gollan et al., 2011). This suggests that they exploit a sophisticated mechanism of control but the precise characteristics of this mechanism have yet to be described. A recent ERP study (Misra et al., 2012) showed that when bilinguals named pictures in their L1 after speaking in the L2 the neural record indicated inhibition for the L1. The current study used event-related potentials (ERPs) in an extended blocked picture naming paradigm to investigate the scope and time course of inhibitory control in planning speech. Relatively proficient English-Spanish bilinguals named pictures in English, their L1, and then in Spanish, their L2. In six subsequent blocks they named pictures in L1 only, but the pictures varied in whether they were old or new and whether they shared lexical or semantic properties with previously named pictures. ERPs revealed an N200 component, associated with response inhibition and conflict detection, when bilinguals produced in the L1 after speaking in their L2. The N200 was observed for several blocks of L1 naming that followed L2 naming but was not modulated by whether pictures were related to the lexical or semantic properties of previously named pictures, suggesting an inhibitory mechanism that is broad in scope and extended in time.

Poster presentation abstracts

Jonathan Berken

Jen-Kai Chen,
Vincent Gracco,
Kate Watkins,
Shari Baum,
& Denise Klein

Montreal Neurological
Institute

Speech production in native and non-native languages: An fMRI study of overt sentence reading

The age at which a second language (L2) is learned has been shown to have consequences for the development of native-like speech. In this regard, research has supported the notion of a biologically-optimal window, or sensitive period, for second language acquisition. Here, we take advantage of the bilingual environment of Québec to investigate the functional patterns of native and nonnative language processing in subjects grouped according to language experience: French-English simultaneous bilinguals who acquired two languages at birth, sequential bilinguals who learned their L2 after the age of 5 years, and English-speaking monolinguals. Simultaneous and sequential bilinguals were highly proficient in both languages, while mono-linguals were only proficient in their native language. Subjects were scanned using functional magnetic resonance imaging (fMRI) while they read sentences aloud in English and French. Native-language reading across all groups revealed comparable brain activation that included frontal and temporal regions as well as the cerebellum. A similar functional pattern was also observed for L2 speech in sequential bilinguals. However, although simultaneous bilinguals showed no activation differences in a direct subtraction of overt sentence reading in their two languages, sequential bilinguals showed more robust recruitment of several cortical areas including the left premotor cortex, left inferior frontal gyrus, and right cerebellum when reading in their non-native language. Similarly, a between-group analysis revealed sequential bilinguals to activate speech motor areas more substantially when reading in English, their L2, compared to simultaneous bilinguals and monolinguals for whom English is a native-language. The results suggest a greater articulatory demand for late L2 learners for non-native speech production and indicate that acquiring a language from birth minimizes the neural resources required for speaking. While our observations are consistent with the notion of a sensitive period for articulatory processing in a late-acquired L2, further research will clarify whether age of acquisition or a simultaneous or sequential bilingual language experience is most critical for native-like speech development.

Poster presentation abstracts

Annie Gilbert

Irina Pivneva,
Yassemine Khawajkie,
& Debra Titone

McGill University

Individual differences in second language ability and executive control modulate voice onset time during bilingual speech production

Many languages share phonemes. However, shared phonemes are often acoustically realized differently. For example, voice onset times (VOTs) for stop consonants produced in English are significantly longer than those produced in French. An open question is how bilinguals accommodate such differences when they produce first and second language (L1 & L2) speech. Here, we investigate whether L2 ability and executive control capacity modulate spontaneously produced VOT durations for 24 French-English bilinguals (12 French L1; 12 English L1). Speech samples were acquired using a naming task during which participants had to name pictures either in their L1 or L2. As expected, VOT durations of voiceless plosive consonants (/p/, /t/, /k/) were significantly longer for English L1 speakers producing English than for French L1 speakers producing French. However, English L1 speakers producing French showed shorter (more French-like) VOT durations as L2 ability or executive control capacity increased. Similarly, French L1 speakers producing English showed longer (more English-like) VOT durations overall (they were higher L2 proficient overall), and still, VOTs were even longer as L2 ability and executive control increased. These results are supported by statistical models showing that both L2 proficiency and executive control modulate VOT durations when controlling for word construction variables. Thus, as with speech planning (e.g., Pivneva, Palmer & Titone, 2012), both L2 ability and executive control capacity modulate the acoustic realization of bilingual spontaneous speech output.

Poster presentation abstracts

Inge Anema

State University of New York at New Paltz

The use of English suprasegmental cues in silent reading in Dutch speakers of English

During oral and silent reading, prosodic phrasing or chunking facilitates processing of ambiguous sentences (Steinhauer, 2003; Steinhauer & Friederici, 2001). The two types of suprasegmentals associated with prosodic phrasing, prosody- and fluency based suprasegmentals, are acquired following separate temporal patterns, an early and a late pattern (Botinis, Granstrom, & Mobius, 2001; Tofimovich & Baker, 2006; 2007). It was hypothesized that fluency-based suprasegmentals (e.g. , speech rate, frequency and duration of pausing) may be an aspect of L2 phonology that sequential learners can attain. The present study examined the influence of second- and foreign-language context on L2 fluency-based suprasegmental use by sequential bilinguals when processing relative clause ambiguities.

Dutch-English bilinguals, living in the Netherlands or the US, and English monolinguals were recruited. Education and L1 background were matched for the two bilingual groups. Working memory (WM) scores for the three participant groups were comparable. Participants silently read and interpreted structurally ambiguous sentences. Native-use of suprasegmental cues was evaluated using four reading measures: reading rate in L2, reading disfluencies in L2, number of pauses in L2 and number of non-native pauses.

The results corroborated the reported cross-linguistic differences in attachment preferences between English and Dutch readers. Data showed differences between the bilingual groups, for example, bilinguals living in the US attached significantly lower than bilinguals living in the Netherlands with object relative clauses, suggesting a stronger L2 influence. Results will be interpreted in the context of WM scores, L1, and L2 influences.

Poster presentation abstracts

Heather Goad

Moti Lieberman,
& Lydia White

McGill University

Parsing ambiguous relative clauses: L2 sensitivity to prosodic cues to high and low attachment

There are well-known crosslinguistic differences in parsing preferences for ambiguous sentences involving relative clauses (RCs); see (1). English speakers show a low attachment (LA) preference (interpreting RC as modifying NP2, the actress); Spanish speakers prefer high attachment (HA) in equivalent sentences (RC modifies NP1, the servant) (Cuetos & Mitchell, 1988).

(1) Someone spoke to the servant of the actress who was on the balcony
                        NP1   NP2   RC

Earlier L2 studies on this phenomenon report mixed results: Fernandez (2002) finds that Spanish-English bilinguals show preferences according to dominant language; Dussias (2003) reports LA preferences in both languages. These studies focused on reading tasks, without considering the potential role of prosody. Crosslinguistically, a prosodic break before RC favours HA, whereas a break before NP2 favours LA. Additionally, prosodic boundary cues are less robust in LA contexts (Fodor 2002; Jun 2003).

In this paper, we investigate L2ers' sensitivity to prosodic boundary information compared to sensitivity to constituent length, which also influences ambiguity resolution (Fodor 1998). We hypothesize that L2ers will find it harder to use boundary cues to determine RC attachment where boundary cues are subtle, as is the case for LA, relying on constituent length and/or L1 preferences in such circumstances. Specifically, we predict that Spanish-speaking learners of English will have problems with the English LA preference, in contrast to English- speaking learners of Spanish, who should have no difficulty with the Spanish HA preference.

L2 English and L2 Spanish speakers, along with native speaker controls, were tested on a listening task manipulating prosodic boundaries and constituent length in sentences like (1). Results so far support the hypothesis: advanced L2 English participants behave like English native speakers whereas intermediates favour HA when there is a conflict between boundary cues (favouring LA) and length cues (favouring HA). Testing of L2 Spanish participants is ongoing.

Poster presentation abstracts

Amelia J. Dietrich

& Paola E. Dussias

Pennsylvania State University

Probabilistic cues in bilinguals processing

Tracking of co-occurrence frequencies in language is important for making predictions during online processing. Research with mono-linguals (e.g., Wilson & Garnsey, 2009) and late bilinguals (SLLs) (e.g., Dussias & Cramer Scaltz, 2008) shows that the likelihood of a particular verb occurring in a specific syntactic frame, known as verb bias, guides the initial selection of a structural analysis. When verb bias information matches participants' expectations [(2),(3) below], speakers do not show processing difficulties. When verb bias is incongruent with expectations [(1),(4) below], speakers experience difficulty.

Given that verb bias is usage-based, it may be better derived from exposure to the L2 in naturalistic contexts. Therefore, this study seeks to investigate what role immersion plays in the ability of SLLs to use English verb bias information to make predictions during L2 processing. We accomplish this by comparing the reading patterns of two groups of proficient Spanish- English SLLs, one immersed in their native language (n=36) and one immersed in their second language (n=13), with a group of monolingual English controls (n=10; data collection ongoing).

Seven same and 15 different bias verbs were embedded in t emporarily ambiguous direct-object [(2),(4)] and sentential-complement [(1),(3)] constructions:

(1)   The senator confirmed the rumor could mean a security leak
(2)   The senator confirmed the rumor when he testified before Congress
(3)   The senator admitted the mistake could mean a security leak
(4)   The senator admitted the mistake when he testified before Congress

Participants read 36 experimental sentences and 72 fillers while their eye movements were recorded. Preliminary findings indicate differences between the groups: the immersed bilinguals dem-onstrate reading patterns similar to native English speakers (i.e., they make predictions about upcoming complements using L2 verb-bias information). Conversely, the non-immersed bilinguals do not make predictions based on verb bias of either of language. Results are discussed in terms of their implications for models of L2 processing.

Poster presentation abstracts

Michael Blasingame

& Ann Bradlow

Northwestern University

The role of language dominance and early acquisition in speech learning by switched-dominance bilinguals

Morphosyntax studies focusing on heritage speakers (bilinguals whose first language is not their dominant language) have shown L2-to-L1 transfer (Montrul, 2010). However, speech research (Oh et al, 2003; Au et al 2002) has shown that heritage speakers can demonstrate native-like speech perception in both languages. Based on this apparent difference between phonetic and morphosyntactic learning, we further examine the effects of language dominance and early acquisition on speech learning in heritage speakers.

In a speech production study, we embedded recordings of 11 Spanish heritage speakers' productions of English and Spanish sentences in noise at two signal-to-noise ratios (SNR), -4 dB (easy) and -8 dB (hard). Native Spanish and English listeners then provided speech intelligibility scores for each SHS talker in each language. At the easier SNR, SHS showed equivalent intelligibility in the two languages, yet at the harder SNR, SHS had higher intelligibility in English than in Spanish. In a speech perception study, 12 SHS identified sentence final keywords in English and Spanish sentences with three manipulations known to highlight L1 and L2 speech processing differences: SNR, speech style, and semantic predictability. The SHS recognition scores were compared to those of L2 learners of Spanish and English. Like L2 learners of Spanish (L1-dominant English), SHS failed to benefit from clear speech in Spanish and were more resistant to noise in English than in Spanish. However, SHS showed better overall speech-¬in-noise recognition across languages compared to the learner groups, and SHS benefitted from semantic predictability in both languages whereas L2 learners only benefited from semantic predictability in their L1.

These results indicate that SHS benefit from their early acquisition of Spanish when compared to L2 learners of Spanish. However, maximally robust, fully native-like speech recognition accuracy was observed in their dominant L2 (English) rather than in their non-dominant L1 (Spanish).

Poster presentation abstracts

Sarah Fairchild

& Janet van Hell

Pennsylvania State
University

Codeswitching habits of Spanish heritage speakers: Testing the Minimalist Program and the Matrix Language Framework

A hallmark of bilingual speech is codeswitching: using two languages within one coherent utterance. Using psycholinguistic techniques, we tested the predictions of two structural inguistic approaches to codeswitching:, the Minimalist Program (e.g., MacSwan, 1999) and the Matrix Language Framework (MLF; Myers-Scotton, 1997). Specifically, we focused on determiner-noun codeswitches where the determiner comes from one language, and the noun from another. According to the Minimalist Program, the determiner should come from the gendered language. In contrast, the MLF argues that the determiner will come from the matrix language, which provides the structural frame of the sentence. The Minimalist Program predicts that a codeswitched NP like "el dog," should be faster than "the perro," due to the gendered Spanish determiner. The MLF predicts that a determiner coming from the matrix language should yield faster codeswitching.

To test the Minimalist Program, English-dominant heritage speakers of Spanish (all habitual codeswitchers) conducted a picture naming task which elicited determiner-noun codeswitches in all language combinations (e.g., el perro, el dog, the perro, the dog). To test the MLF, the same task was administered, this time with each picture preceded by a lead-in sentence in English or Spanish (framing the matrix language). Prior to these tasks, bilinguals completed a bare noun picture naming task. In both the determiner-noun and sentence context picture naming tasks, the Spanish-English condition ("el dog") was produced slowest and least accurately, regardless of the matrix language. Comparing the RT and accuracy patterns of the three task conditions indicated that accessing the Spanish determiner caused the difficulty. This finding challenges both theories. Moreover, bilingual corpora indicate that a switch from Spanish determiner to English noun is the most prevalent NP switch. Thus, while it may be a natural codeswitch for bilingual speakers, it nevertheless incurs a processing cost relative to switching in the opposite direction.

Poster presentation abstracts

Vanessa Taler

Shanna Kousaie,
Julien Blacklock,
Dominique Fijal,
& Natalie Phillips

University of Ottawa

The relationship between codeswitching behaviour and neuropsychological performance

Recent research suggests that bilingual speakers exhibit certain cognitive advantages over monolinguals, specifically in tasks of executive function, while performing worse than monolinguals in language tasks such as naming and verbal fluency. It has been suggested that a speaker's "behavioural ecology" (i.e., the way in which they use their languages) may play a role in these cognitive effects. For example, codeswitching, or the use of both languages within a single utterance, may increase demand on specific neural circuits and thus shape the speaker's cognitive profile. We developed a protocol to elicit codeswitching in a naturalistic conversational setting. Twenty-five highly proficient English-French bilinguals from Ontario and Quebec (age range: 18-30) completed the codeswitching protocol as well as a neuropsychological battery and a questionnaire that assessed self-perceived codeswitching behaviour and attitudes. Overall, speakers who codeswitched more achieved higher scores on the Boston Naming Test in English and the Wisconsin Card Sorting Test (total categories) than those who codeswitched less, but exhibited lower performance on a letter fluency task (FAS), both in English and in a bilingual condition (words from either language accepted). These results suggest that high and low codeswitching behaviours are associated with differing cognitive profiles both in executive function and language tasks. Moreover, there was no correlation between self-report of codeswitching behaviour and actual frequency of codeswitching in our protocol, suggesting that caution should be taken when interpreting self-report of codeswitching behaviours.

Poster presentation abstracts

Catherine Caldwell-Harris

Rama Novogrodsky,
Robert Hoffmeister,
Sarah Fish,
Jon Henner,
& Rachel Benedict

Boston University

L1 ability is a better predictor than age for L2 reading comprehension for deaf readers

In typically developing children, reading-comprehension and language ability are tightly age-related. In deaf learners, vocabulary knowledge in L1 signed language is correlated with reading-comprehension in L2. We tested the relationship between age and language as predictors for reading-comprehension in deaf signing children. We predicted that native signers would resemble typically developing children in the dependence of language and reading-comprehension on age. For non-native signers, the primary factor predicting reading-comprehension in L2 was expected to be language ability.

138 Deaf students aged 7-18 were tested: 37 native signers (with deaf parents) and 101 non-native signers (hearing parents). The non-native signers received intensive exposure to ASL, upon entering the educational system, although some had parents who had learned some ASL. Participants were tested on a receptive multiple-choice antonym test of ASL and the SAT9-RC (Reading-Comprehension) test.

Stepwise regression analysis indicated that ASL knowledge, as represented by antonym scores, explained more of the variance (R^2 = .347) than did age (R^2 =.104) for the reading-comprehension. The parameter of native signing was not significant. Comparison between the two groups showed that correlation between age and antonym scores was stronger for the native (r = 0.57) than for the non-native signers (r = 0.39)). The correlation between age and reading-comprehension was stronger for the native (r = 0.67) than for the non-native signers (r = 0.37).

L1 as measured by ASL antonym score significantly predicts L2 reading-comprehension and is a stronger predictor than age. We conclude that L1 native signers' language and L2 reading-comprehension are more tightly connected to age than those of the non-native signers and are thus more similar to the case of typically developing children, presumably because of receiving strong language input from birth.

Poster presentation abstracts

Marie Pourquié

Université de
Montréal

Multilingualism and aphasia: Theoretical and therapeutic perspectives

Since the development of the Bilingual Aphasia Test (Paradis & Libben, 1987), are multilingual speakers with aphasia assessed in more than one language? We will study the case of two multilingual societies: Québec and the Basque Country.

Besides social and clinical issues, as aphasic errors are constrained by the structural characteristics of each language, it is crucial to collect and study aphasic manifestations in different languages in order to address theoretical issues on universality and language specificity. We will present data collected from a cross-linguistic case study of agrammatic aphasia in Basque and French. Two participants with agrammatism assessed either in Basque or French, performed the same spoken tasks: relative clause production (=10 stimuli) and prepositional phrase production (=20 stimuli). Data were recorded with a digital voice recorder.

Despite distinct properties to build a relative clause in Basque and French (pre- nominal versus post-nominal and bound versus free complementizer, respectively), similar performance was observed (0/10 correct). In contrast, different performance was observed in the prepositional phrase production task, which involves distinct morphological processes in Basque and French such as using grammatical cases (i.e. bound morphemes) or prepositions (i.e. free morphemes), respectively. While the Basque speaker produced no error in the use of grammatical cases, the French speaker produced both omission and substitution errors in the use of prepositions. On the one hand, these observations presume universal complexity triggered by a certain type of grammatical structures (e.g. relative clause) and on the other hand, different neurocognitive mechanisms underlying different morphological processes.

We will mention new perspectives on the study of Basque-French and Basque-Spanish bilingual people with aphasia. To conclude, we will reflect on the potential interaction of multilingualism with linguistic deficits and compensatory strategies as an interesting line of research for both theoretical and therapeutic issues.

Poster presentation abstracts

Brendan Tomoschuk

Guillaume Thierry,
Janet van Hell,
& YanJing Wu,

Pennsylvania State
University

Priming effects in color perception in Greek-English and Russian-English bilinguals

The Sapir-Whorf hypothesis states that the language you speak affects your perception of the world. Thierry et al. (2009) showed that the Greek language affects how Greek-English bilinguals process the color blue, which has two color terms in Greek: ghalazio - 'light blue' and ble - 'dark blue'. Using the visual Mismatch Negativity (vMMN) component of Event Related Potentials (ERPs) as an index of perceptual change, they showed that native speakers of Greek perceived the switch between these two shades more saliently in an oddball paradigm than the switch between two shades of green that have the same color name in Greek (prasino).

Here we address how these differences might vary depending on the language context. We sought to show that color perception can be modulated by the alphabetic context in the task at hand. Greek-English bilinguals were subjected to a go-no go judgment task while ERPs were recorded. Participants were presented with letters from the Roman alphabet in the first block, letters from the Greek alphabet in a second, and in a final block, a mix. They pressed a button for upper case letters (5%) and ignored lower case ones (95%). Letters were surrounded by peripherally perceived color circles in light or dark blue and light or dark green. The probability of occurrence of the circles conformed to an oddball paradigm and participants received no instruction regarding color. Greek and Roman letters therefore created an implicit language-based script context.

Preliminary findings replicated Thierry et al. (2009) for the Roman script condition by showing a color-induced vMMN at posterior electrode sites. Magnitude differences suggest a language-context based effect on color perception. We are currently preparing a follow up using Russian-English bilinguals exploiting the fact that Russian, like Greek, has two separate color terms for light blue ('goluboy') and dark blue ('siniy').

Poster presentation abstracts

Rachel Groenhout

Nivja De Jong,
Rob Schoonen,
& Jan Hulstijn

University of Maine

Second language fluency: Speaking style or proficiency?

Proficiency in a second language (L2) is sometimes measured by, or informally inferred from, L2 oral fluency. While fluency is related to proficiency, there are additional elements that influence a speaker's oral fluency, such as personality or speaking style. In this study, L1 and L2 oral samples were collected from L2 speakers of Dutch from two different L1s (of differing typological distance from Dutch). An L2 vocabulary test was given to ascertain L2 proficiency level. Uncorrected L2 fluency measures, as well as L2 fluency measures corrected for L1 fluency, were obtained to address three research questions: 1) To what extent can different measures of L2 fluency (e.g., length of pauses or speed of speech) be predicted from the equivalent measures in L1? 2) Are corrected L2 fluency measures better predictors of overall L2 proficiency than uncorrected L2 measures? 3) Is the predictive value of (corrected) measures of L2 fluency dependent on typological distance between L1 and L2? Analyses of L2 proficiency, uncorrected L2 fluency measures, and corrected L2 fluency measures indicate that, for the 51 participants and two L1s measured here, typological distance is nonsignificant, but the influence of L1 fluency on L2 fluency is. In our sample, the amount of variance in the L2 fluency measures explained by the same fluency measures in L1 varied from 21% (speed fluency) to 57% (breakdown fluency). Based on these outcomes, we propose that L1 fluency measures should be taken into consideration, in part to account for an individual speaking style, when L2 fluency measures are collected. These results have particular relevance in situations where L2 fluency is used as an indicator of L2 proficiency.

Poster presentation abstracts

Hilary Duncan

Shanna Kousaie,
& Natalie Phillips

Concordia University

EEG coherence and executive functions in monolinguals and bilinguals

Fluency in two or more languages may contribute to better executive functioning (EF). Behavioural measurements may not always be sensitive enough to capture language group differences in healthy young adults. For example, monolingual and bilingual adults showed differences in neural responses associated with EF tasks, despite having similar behavioural results. The fronto-parietal network responsible for EF can be studied using electro-encephalography (EEG) coherence, a measure of covariance in electrical activity recorded from electrodes placed over different cortical areas. This study examined EEG coherence in 22 bilinguals and 24 monolinguals during a computerized Stroop task (with congruent, incongruent, and neutral conditions). Coherence was examined for within-hemisphere (FC3/CP3, F3/CP3, F3/P3, F3/FC3, FP1/F3, FP1/F7) and cross-hemisphere electrode pairs (FC3/FC4, F3/F4, P3/P4, F3/FC4, F4/FC3) for the delta, theta, and gamma frequency bands. No overall language group differences were found; however, pairwise comparisons revealed that the pattern of coherence across electrode pairs and conditions was different for the two language groups. For example, in the gamma band, the monolinguals had no differences in coherence across the three conditions at any electrode pair. In contrast, the bilinguals showed increased coherence for the congruent condition as compared to both the incongruent and neutral conditions at 2 electrode pairs in the within-hemisphere analysis, FP1/F3, FP1/F7, all $p < .038$, and 4 electrode pairs in the cross-hemisphere analysis, FC3/FC4, F3/F4, F3/FC4, F4/FC3, all $p < .034$. This suggests that bilinguals had increased cortical connectivity only during the low conflict condition as compared to the high and no conflict condition. Monolinguals, on the other hand, showed the same level of coherence for all conditions, suggesting that this local network was active regardless of the conflict demands. Additionally, these findings were for frontopolar/frontal pairs, suggesting that differences between the conditions for the bilinguals were being mediated by a relatively local network.

Poster presentation abstracts

Irina Pivneva

Naveed Sheikh,
Veronica Whitford,
Julie Mercier,
& Debra Titone

McGill University

Is domain-general executive control among bilingual young adults predicted by individual differences in bilingual history, proficiency & use?

Bilingualism is thought to "exercise" and, over time, enhance domain-general executive control because of the need to manage automatic cross-language activation (Bialystok, Craik, & Luk, 2012; but see Hilchey & Klein, 2011; Papp & Greenberg, 2013). However, bilinguals as a group differ substantially in second language (L2) history, proficiency and usage, which in turn could impact the degree of cross-language activation they experience, and whether cross-language activation exercises executive control.

To address this issue, we used multiple regression analyses to assess whether continuous variables such as L2 age of acquisition (AOA), current L2 exposure, L1/L2 language mixing (e.g., at home, work and social situations), and their interactions, predicted greater executive control performance using the Simon task in 521 bilingual younger adults. We statistically controlled for age and education. There were two key findings. First, bilinguals with greater L2 exposure showed greater executive control performance (i.e., smaller Simon RT cost). Second, executive control varied as a function of both L2 AOA and language-mixing history. Specifically, late L2 AOA bilinguals (who acquired their languages in a compart-mentalized, sequential fashion) showed greater executive control to the extent that they frequently mixed their languages in daily life. Conversely, early L2 AOA bilinguals (who acquired their languages in an intermixed, simultaneous fashion) showed greater executive control to the extent that they rarely mixed their languages in daily life.

These results suggest that individual differences among bilinguals in L2 exposure, history and usage relate to domain-general executive control. Specifically, bilinguals appear to reap executive control advantages when their current language mixing behaviour conflicts with how they initially acquired their two languages (i.e., sequentially vs. simultaneously). Thus, what is cognitively demanding for bilinguals, and over time would lead to executive control advantages, may depend on the totality of their current and past bilingual experiences (Green, 2011).

Poster presentation abstracts

Liz Smeets

Luisa Meroni,
& Sharon Unsworth

McGill University

Acceleration in bilingual acquisition: the case of specific indefinites

Crosslinguistic influence in 2L1 has been claimed to lead to delay and acceleration (Paradis & Genesee 1996). Whilst various studies have demonstrated the existence of delay, the evidence for acceleration is limited (cf. Meisel 2007). Furthermore, most studies in this area focused on the acquisition of morphosyntax and syntax-pragmatics; to date, few examine the area of syntax- semantics (but cf. Serratrice et al. 2009, Unsworth 2012). This study seeks to fill these gaps.

Previous research has shown that unlike adults, 4-to-6-year-old Dutch monolinguals, often treat scrambled sentences as ambiguous between a specific (1a) and a non-specific (lb) interpretation (Unsworth et al., 2008).

(1) Ian heeft een kaarsje niet uitgeblazen
a. There is a candle Ian did not blow out (a>not)
b. Ian did not blow out any candle (not>a)

In Italian, children interpret indefinites specific because they have the same lexical entry as the numeral "one" (uno/a/un'/un) (following Su 2001). By using a (picture) Truth-Value-Judgment-task we demonstrate this is indeed the case: Li Italian (4;6-5;11;n=11) children predominantly interpreted (2) as in (2a)(88,8 % (48/54)).

(2) Sandro non ha spento una candelina
'Sandro did not blow out a candle'
a. There is a candle Sandro did not blow out (a>not)

Subsequently, the same task was used in both languages with 2L1 Dutch-Italian (4;4-6;1;n=13) and in Dutch with age-matched L1 (n=15) children. The results show that (i) like monolinguals, 2L1 children almost always accepted the specific interpretation in Italian (96 % (62/65); U(20)=35, p=.45); (ii) this was also the case for Dutch (acceptance rate: 97% (63/65)); and (iii) crucially, the 2L1 children accepted the specific reading significantly more often than the age-matched monolinguals (cf. 55% (34/65); U(26)=45, p=.0005). We claim that the availability of the specific interpretation of specific indefinites in sentences with negation in Italian facilitates its acquisition in Dutch in Italian-Dutch (2L1) bilinguals.

Poster presentation abstracts

Alexandra Vorobyova

Université de Québec à Montréal

Overspecified references: An experiment on lexical acquisition in virtual environments

Producing referring expressions plays a central role in human communication: people can only communicate if they can establish joint attention regarding the object they are discussing. Studies have shown that speakers spontaneously overspecify when they produce referring expressions, meaning that they include more information than is strictly necessary for their addressee to identify an object. In the literature, there are two competing explanations for this phenomenon: (1) Overspecification is a result of humans' limited cognitive resources, and (2) Overspecification is a useful tool for communication and gives the listener more chances to align with the speaker, compensates for perceptual difficulties, and facilitates long-term communication.

Our hypothesis is coherent with explanation (2) — we believe that by giving overspecification early on, speakers ensure that all properties of the referent are accessible later, even if it takes more resources to process this information. In order to test this hypothesis, we designed an experiment with a situation of second language (L2) acquisition, because it permits us to isolate a situation where no previous alignment between speakers exists. We created an interactive 3D world in order to teach subjects a set of words in Russian, comparing three groups receiving different amounts of overspecification during the practice phase of the experiment.

Our results show that the subjects who received more overspecified referring expressions during the practice phrase improved their lexical knowledge of the new lexemes more significantly. From the subjective results we gathered, we found that subjects rated the utility of practicing vocabulary with overspecification higher than with minimal specification. This confirms our hypothesis that overspecification is a useful tool in long-term communication. Our conclusion is that the extra time used to process overspecified REs is not a result of violated expectations but of the alignment between speaker and listener, and useful for future communication.

Poster presentation abstracts

Katsuo Tamaoka

Michael Mansbridge,
Zhuang Lianzhen,
& Rinus G. Verdonschot

Nagoya University

The insensitivity of native Japanese speakers to English tense inconsistency

Many speakers of L1-Japanese despite of having high L2-English proficiency frequently demonstrate insensitivity to subject-verb agreement violations (Ojima et al., 2005). For example, a third person singular requires —s in English, but no such agreement exists in Japanese. A lack of agreement in the L1 may elicit insensitivity to recognize agreement violations such as 'My brother play tennis'. Contrastingly, a sequence-of-tense (SOT) language like in English requires tense- consistency. Thus, English-as-second-language learners (ESLs) with non-SOT backgrounds may be prone to display insensitivity to tense consistency in English sentences. This assumption was tested by L1-Japanese students learning English as a second language.

Using eye-tracking, the present study administered a sentence-correctness decision task to 39 Japanese ESLs using 48 sets of English sentences with the 'when' subordinate clause. Half of the items were tense-consistent, that is, they were acceptable in both Japanese and English (e.g., 'When I was in Paris, I bought some suitcases.'), while the other half were tense-inconsistent, which is acceptable in Japanese, but not in English (e.g., 'When I am in Paris, I bought some suitcases.').

A large difference between consistent-tense (M=75.0%) and inconsistent-tense (M=43.7%) was found for accuracy. Japanese ESLs showed difficulties in correctly rejecting tense-inconsistent sentences, indicating that L2 competence can be affected by L1-Japanese particularities. Additionally, eye-tracking data indicated that tense-inconsistent sentences revealed longer re-reading times and higher regression frequencies in the second verbs than tense-consistent sentences. Therefore, Japanese ESL students exhibited extra processing costs to tense inconsistency in later processing measures. However, these longer reading times did not lead to higher accuracy. Consequently, although Japanese ESLs have fundamental awareness (i.e., longer re-reading and higher regression frequencies) that tense inconsistent sentences may somehow be "inappropriate", their sense of L1 syntactic rules governs the correctness judgments for L2 English.

Poster presentation abstracts

José Alemán Bañón

Alison Gabriele,
Robert Fiorentino,
& Kristi Bond

University of Kansas
University of Reading

Tracking brain responses to morphosyntax: a longitudinal ERP study of novice learners of Spanish

We used ERP to examine the role of the L1 and individual differences in the processing of gender and number agreement in English-speaking beginners of Spanish. Learners were tested after two, six, and eight months of exposure. The experiment targeted number agreement on verbs, which is similar in Spanish and English (1); number agreement on adjectives, where English does not instantiate agreement (2a,b), and gender agreement on adjectives, which is unique to Spanish (2a,c).

(1) Subject-Verb
La pasajera$_{sg}$ brasileña (a) desembarca$_{sg}$/ (b) *desembarcan$_{pl}$ en San Diego.
'The Brazilian passenger disembarks at San Diego.'
(2) Noun-Adjective Number/Gender
La biblioteca$_{fem.sg}$ es (a) moderna$_{fem.sg}$/ (b) *modernas$_{pl}$ / (c) *moderno$_{masc}$ y la escuela también.
'The library is modern and the school too.'

Learners were also tested on several verbal and nonverbal cognitive measures: verbal aptitude (Llama, MLAT), processing speed, working memory, and inductive/spatial reasoning (WAIS IV).

The Spanish controls (n=12) yielded P600s for all violation types. For learners (n=23), a small positivity emerged in midline electrodes for number violations on verbs and adjectives across sessions. After six and eight months, this positivity evolved into a more broadly distributed P600, significant in both the midline and the hemispheres (the effect was only numerical for number on adjectives after eight months). Gender violations did not yield any effects at any point. Results also revealed significant correlations between verbal aptitude (MLAT) and behavioral sensitivity to all violation types in all three sessions.

The fact that sensitivity emerges only for number in contexts where English does (1) and does not instantiate agreement (2b) suggests that at early stages of development, processing is modulated by the similarity in feature inventory between the L1/L2 (Schwartz and Sprouse, 1996; Hawkins, 2001). Results also suggest that at early stages of development, verbal aptitude (MLAT) is a strong predictor of sensitivity to agreement overall.

Poster presentation abstracts

Lara Pierce

Denise Klein,
Jen-Kai Chen,
& Fred Genesee

McGill University

Neural activation during phonological working memory in international adoptees

International adoptees (IA) stop acquiring their first language (L1) at the time of adoption. Their second language (L2) is thus acquired like an L1 in that they receive input exclusively in that language. However, like L2-learners, they experience both a delay and previous exposure to another language. We investigated whether the neurocognitive processes elicited by IA children using their adopted language are similar to those elicited by L1- or early L2-learners, or whether they exhibit a unique pattern. Behaviourally, IA children have shown deficits in tasks assessing L2 phonological working memory (PWM), such as sentence (Gauthier & Genesee, 2011) and non-word repetition (e.g., Scott, Roberts, & Krakow, 2008), however this has not been examined neurocognitively. We used BOLD fMRI to scan three groups of 10 – 16 year old participants: (1) 10 IA children from China, adopted into French-speaking families before age three, who now speak only French; 2) 10 L1-Chinese children who began learning French as a second language by age three; and 3) 10 monolingual French-speaking children. While in the scanner, participants completed an auditory n-back task, shown to assess PWM, using French pseudo-words (e.g., Chee et al., 2004). Bilinguals and IA children showed a different pattern of activation as compared to monolinguals, despite the fact that both the bilingual and IA groups began learning French prior to three years of age. Results suggest that even short delays in language acquisition onset lead to differences in neurocognitive processing.

Poster presentation abstracts

Michael Madden

Andrew Rosenberg

CUNY Graduate Center

Pfft, my sarcasm is better than yours; Comparing the prosodic realizations of sarcastic speech in English and French native speakers and French second language learners

While sarcasm is omnipresent in everyday speech, it has only recently received attention in language research. Previous work has shown that in English sarcastic key phrases are produced with low pitch and longer duration, whereas sincere ones are uttered with high pitch and shorter duration (Cheang & Pell, 2008). In French however, it has been shown that the inverse for pitch is true (D'Imperio, 2013). However, it remains an open question how learnable these features are to second language (L2) speakers with significantly differing first language (L1) prosodic structures. Because earlier studies were limited to L1 speakers, the goal of this work is to extend this paradigm to examine the learnability and transfer of sarcasm to a second language (L2).

Native English and French high proficient English as a second language (ESL) speakers listened to utterances varying in the fundamental frequency (F0) measure and word duration and categorized them as sincere or sarcastic in their L1. French speakers were additionally assessed on their competence on English sarcastic prosody. Thus, this study investigated whether modulation of F0 and syllable duration results in the same classification of sincerity or sarcasm as previously shown in both languages, and how French ESL speakers interpret English sarcasm. Critically, the use of single phrase utterances allows a relatively pure assessment of the impact prosodic cues have on the perceived status of an utterance. Preliminary results show that French and English native speakers categorized utterances according to the preference from their own prosodic system. Furthermore, French L2 speakers also relied more on cues transferred from their L1 and therefore classified the English utterances differently than English native speakers. This work constitutes an important contribution to understanding the nature of sarcastic utterances and is the first investigation of its kind focusing on the interface between sarcasm and bilingualism.

Poster presentation abstracts

Matthew Carlson

Michael Blasingame,
Angela Fink,
& Matthew Goldrick

Pennsylvania State
University

Do you hear what I hear? Priming language-specific phonotactic constraints in speech perception

Listeners utilize the structural properties of their language to help them interpret speech, leading to misperception of non-native sounds and sound sequences. For example, Spanish contains no words with initial sCV sequences, a phonotactic restriction well-known to influence cross-language borrowings. Words like snob are "repaired" by appending an initial /e/ (esnob). Interestingly, similar effects are observed in on-line speech perception tasks. Native Spanish speakers confronted with a spoken token of snob report hearing esnob, even though the stimulus lacks the initial vowel, whereas speakers of languages that allow sCV sequences (e.g. French) do not (Cuetos et al., 2011; Hallé et al., 2008; to appear).

How does bilingual perception relate to these monolingual extremes? Second language users can develop native-like perception of sCV sequences—even when this conflicts with their first language (Parlato-Oliveira et al., 2010). However, the perceptual consequences of possessing conflicting phonotactic constraints are unclear. Does acquiring a language that allows sCV structures eliminate misperceptions? If not, can bilinguals dynamically shift constraints during perception?

We investigated these possibilities by examining misperceptions in bilinguals fluent in both Spanish and English. All participants completed a vowel detection task (Cuetos et al., 2011) in a monolingual Spanish experimental context. Half of them then performed an English picture-naming task before repeating the Spanish vowel detection task. The performance of this group was compared to a group that performed the picture-naming task in Spanish. A monolingual English control group was included for comparison.

The bilinguals exhibited higher rates of misperception than monolingual English speakers, but the rate of misperceptions was modulated by priming. English- dominant (but fluent in Spanish) bilinguals reported hearing /e/ less often after naming pictures in English, even though the vowel-detection task was again presented in Spanish. This suggests that bilinguals can dynamically deploy distinct phonotactic constraints depending on recent linguistic experience.

Poster presentation abstracts

Meghan Clayards

& Elizabeth Wonnacott

McGill University

A case study of childhood L2 learning of phonological contrasts

We report a case study of two German speaking children who entered the UK at age 6:6 and 8:10 with no prior English exposure. We tracked the emergence of two contrasts: word final stop voicing - voiceless only in German - and the vowels /ɛ/ and /æ/ - /æ/ is missing in German.

Each child was asked to repeat 48 sentences of the type "the next word is ___ now" spoken by a native experimenter; 18 words contained target consonants and vowels. The children were tested after 3, 4, 4.5, 7 and 9 months. The duration of vowels, consonant closures and releases (if released), F1 and F2 were measured for target sounds. 12 native adults listened to the sentences and categorized the word according to voicing and vowels (4AFC: -ep, -eb, -ap, -ab).

Results revealed a different trajectory of learning for the consonants and vowels. The vowels showed native-like formant frequencies from the first time of testing while voiced and voiceless consonants were acoustically very similar at the first testing time and gradually became more distinct (time*voicing interaction). Perceptual tests confirmed that listeners made few errors of vowel quality but often confused voiced stops for voiceless ones (first 4 test times only). Interestingly, this was true even when the children were making acoustic distinctions between the voiced and voiceless stops. This was especially clear for the younger child who's voiced stops were identified as voiceless 50% of the time but who produced consistent differences in both vowel length and closure duration. After 9 months of exposure, both children produced stops that were identified correctly (>80%). Thus both children went through a stage of covert contrast of stop voicing in line with the literature on first language acquisition.

Poster presentation abstracts

Rosa Guzzardo Tamargo

& Paola E. Dussias

Pennsylvania State University

Reading natural code-switches is not costly to the comprehension system

Many studies report switch costs in bilingual production (Costa et al., 2006; Meuter & Allport, 1999; Tarlowski et al., 2012). Fewer studies have focused on the comprehension of code-switches and most have examined single-word switches (Moreno et al., 2002). Here we investigate whether there are costs when Spanish-English bilinguals comprehend naturally produced intrasentential switches. Eye-movements were recorded as participants (n=42) read sentences on a computer screen and answered comprehension questions. The experimental stimuli included two baseline unilingual English sentences: one with a progressive structure (C1: ...the actors are rehearsing their lines...) and one with a perfect structure (C2: ...the actors have rehearsed their lines...). These baselines were compared to two analogous code-switched conditions with a switch at a phrasal boundary (C3: ...los actores are rehearsing their lines... / C4: ...los actores have rehearsed their lines...). C3 and C4 were, in turn, compared to two additional code-switched conditions in which the switch occurred at a natural syntactic position (C5: ...los actores están rehearsing their lines...) and an unnatural syntactic position (C6: ...los actores han rehearsed their lines...). A two-way repeated measures ANOVA with language (switch vs. non-switch) and auxiliary type (progressive vs. perfect) as within-subjects variables revealed no main effects of language between C1 and C3 nor between C2 and C4 [Gaze duration: $F(1,41) = .15$, $p = .701$ / Total time: $F(1,41) = .97$, $p = .330$]. Another ANOVA with switch site (auxiliary vs. participle) and auxiliary type (progressive vs. perfect) as within-subjects variables revealed significant interactions of switch site and auxiliary type between C3 and C5 and between C4 and C6 [Gaze duration: $F(1,41) = 5.30$, $p = .026$ / Total time: $F(1,41) = 9.49$, $p = .004$]. Findings indicate that when bilinguals read naturally produced code-switches (C3, C4, and C5), they do not display any switch costs. Processing costs only appear when the switch does not resemble natural code-switching (C6).

Poster presentation abstracts

Kinsey Bice

Britney Massimino,
& Judith Kroll

Pennsylvania State
University

On the fate of the native language during second language learning

Adults learning a second language (L2) must acquire the lexicon, grammar, and phonology associated with the new language. Much of the past research on late L2 learning has focused on the factors that enable or constrain this process. Less research has addressed the fate of the native language during L2 learning. Although studies of cross language activation and transfer have shown that the first language (L1) is active when the L2 is used, the assumption has been that L1 is fundamentally stable. A number of studies have challenged that assumption by demonstrating that early in learning (e.g., Kroll et al., 2002) and in immersion contexts (e.g., Linck et al., 2009), there is evidence for inhibition of the L1. The hypothesis that we explore in the present study is that costs to the L1 are a critical feature of L2 learning. The degree to which learners are able to tolerate change within the native language may predict the success of L2 learning. On this view, learners who are able to modulate the L1, either by actively inhibiting L1 to enable L2 use or by revealing influences of the L2 on the L1, may be more likely to achieve high levels of L2 proficiency. We report two experiments, using both behavioral and electrophysiological measures, in which native English speakers at early stages of acquiring Spanish as an L2 were tested on lexical comprehension and production in both English and in Spanish. In one experiment, the learners were true beginners, having had only preliminary classroom exposure to Spanish. In another experiment, the learners were intermediate students, tested before, during, or after an immersion experience in Spain. Performance was compared to that of functionally monolingual speakers of English. We discuss the implications of the observed trajectory of L1 changes for claims about L2 development.

Post-conference anniversary events

Invited address

Distinguished Alumni Award for Research Leadership

Dr. Christy L. Ludlow

James Madison University

Developing patient centered models for neuro-rehabilitation of voice and swallowing disorders

This presentation will review the current challenges concerning the neuro-rehabilitation of voice and swallowing disorders which include: small to moderate effect sizes, limited carry-over to everyday living situations, the exponential growth of the aging population, limited work force size relative to the population needing neuro-rehabilitation, and patient preferences for aging in place and home care. Solutions are proposed based on the principles of neuroplasticity with the use of retraining devices that can be used in the home settings by patients and their caregivers. Such devices can increase therapy effectiveness by providing a high intensity of practice, sensory stimulation to enhance brain function and increase patient control to regain function.

October 25th, 15:30 - 16:30
Faculty Club Ballroom

Post-conference anniversary events

SCSD Distinguished Alumni Awards Ceremony
October 25th, 16:30 - 17.00, Faculty Club Ballroom

In keeping with its history of excellence in the clinical and research domains, the School is proud to honour distinguished graduates for their outstanding contributions to the advancement of scientific knowledge and clinical practice in the field of communication sciences and disorders.

The Distinguished Alumni Award for Professional Leadership gives special recognition every two years to a graduate of the M.Sc.A. program who has distinguished himself or herself in the professional community by providing outstanding leadership in service delivery or clinical supervision, and/or making other significant innovative contributions to the field of communication sciences and disorders.

2012 recipient: Sharon Fotheringham, MSc(A)'72

The Distinguished Alumni Award for Research Leadership gives special recognition every five years to a graduate of the MSc or PhD programs who has distinguished himself or herself in the academic community by providing exemplary leadership in research and training in the field of communication sciences and disorders.

2014 recipient: Christy L. Ludlow, BS'65, MSc(A)'67

The Alumni Award of Merit for Communication Sciences and Disorders, launched in 2013 as part of the Medicine Alumni Global Awards program, is presented to alumni from McGill's Faculty of Medicine who have enhanced the reputation of McGill University and their profession/research discipline through their contributions of exceptional leadership, community service and/or scholarly excellence.

2013 recipient: Jill Harrison, BA'72, MSc(A)'74

Post-conference anniversary events

SCSD Distinguished Alumni Awards (continued)

La Bourse de recherche pour l'étude des neurosciences de la communication humaine a été créée en 2012 par Lucie Besner, à l'intention d'un étudiant inscrit aux études supérieures dans l'École des sciences de la communication humaine. Cette bourse serait remise à chaque année à un étudiant du doctorat qui effectue des travaux de recherche sur les neurosciences de la communication humaine. Plus précisément, elle permettra au récipiendaire de faire progresser les connaissances de la relation entre le langage, la communication et le cerveau humain, grâce à des études axées sur les adultes souffrant de troubles du langage découlant de troubles neurovasculaires ou neurodégénératifs, ou de l'utilisation des techniques de neuro-imagerie.

The Besner Fellowship for the Study of Human Communication Neuroscience was founded in 2012 through a generous endowment created by Lucie Besner. The Besner Fellowship is awarded to a PhD student in the School who is conducting research that advances knowledge of the relationship between language, communication and the human brain, through studies focused on adults with acquired language impairments resulting from neurovascular or neurodegenerative disorders, or using neuroimaging techniques.

2013 recipient: Rachel Schwartz

General information

Venues

(A) Faculty Club: Venue for main conference events, SCSD events
3450 McTavish Street (H3A 0E5)

(B) Thomson House: Venue for pre-conference registration, poster sessions
3650 McTavish Street (H3A 1Y2)

(C) Bronfman Building: Venue for Beatty Memorial Talk by Dr. Carreiras
1001 Sherbrooke Street West (H3A 1G5)
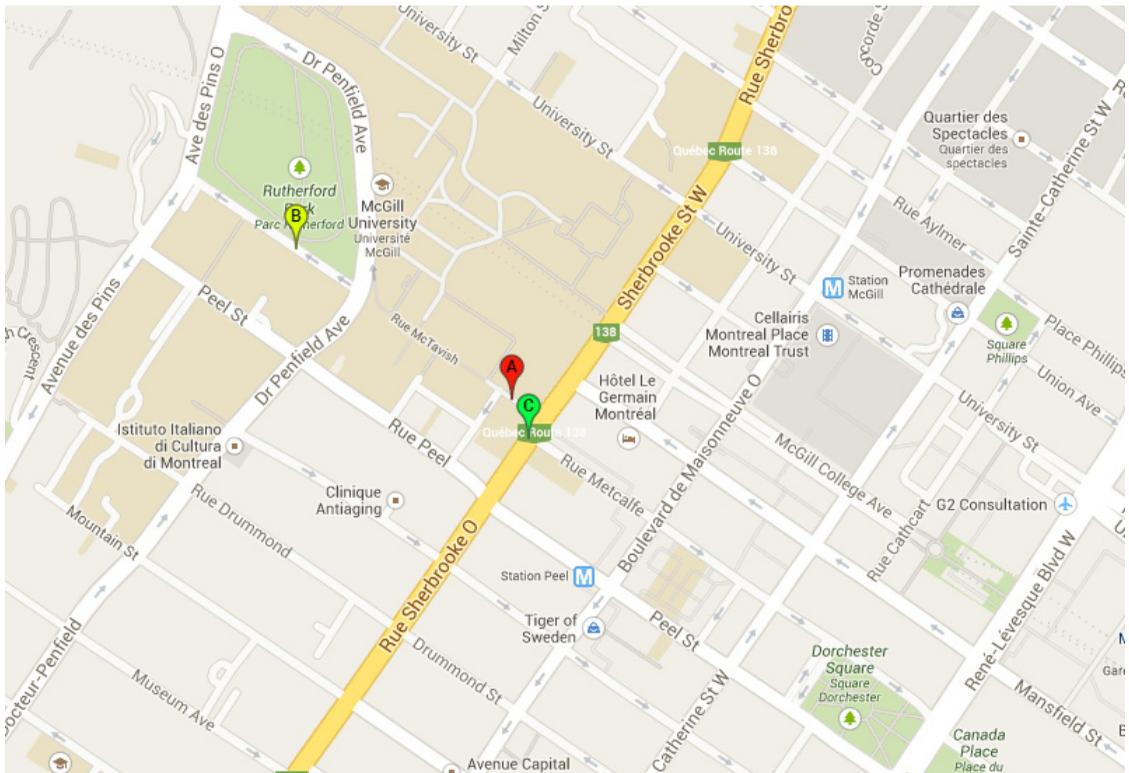
General information (continued)

Internet connection

Free wireless internet has been made available for conference registrants.

Please check your registration materials for details on how to log in.

Computer / copying facilities

McGill University Redpath/McLennan Library (corner of McTavish and Sherbrooke)
Copy 2000 (1115 Sherbrooke Ouest, corner Peel)
Copy Nova (1015 Sherbrooke Ouest, just near the Bronfman building)

Restaurant recommendations

Lunch options on/near campus

SSMU student building (3600 McTavish)
Redpath library cafeteria (basement of library building)
SoupeSoup (2183 Crescent)
Mangia (1101 Boulevard de Maisonneuve Ouest)
Clafouti (2122 Drummond)
Universel Déjeuners & Grillades (2055 Peel)

Dinner

Les Trois Brasseurs (microbrewery with vast menu, 732 Ste-Catherine Ouest or 105 St-Paul Est in Old Port)
Brasserie Reservoir (9 Avenue Duluth)
Trois petits bouchons (local cuisine, 4669 St-Denis St)
Au pied de cochon (local cuisine, 536 Duluth Est)
L'Express (French bistro, 3927 St-Denis)
L'académie (Bring Your Own Wine, 4051 St-Denis)
Monsieur B (Bring Your Own Wine, 371 Rue Villeneuve Est)
Aux Vivres (vegan, 4631 boulevard St-Laurent)
Joe Beef (2491 Notre-Dame)
Toqué! (market-fresh/local cuisine, 900 Place Jean-Paul-Riopelle)
Les Enfants Terribles (French/local cuisine, 1257 Avenue Bernard)
Tri Express (Japanese/sushi, 1650 Laurier Est)
Il Focolaio (pizza, 1223 Rue Du Square Phillips)
Bottega (pizza/Italian, 65 Rue St-Zotique Est in Little Italy)
Pintxo basque (256 Roy Est)

Famous in Montreal

St-Viateur Bagel (263 Rue St-Viateur Ouest)
Fairmount Bagel (74 Ave Fairmount Ouest)
Schwartz's Delicatessen (3895 St Laurent Blvd)
La Banquise (994 Rue Rachel Est)
Poutineville (1365 Ontario Est)
Jean-Talon Market (7070 Avenue Henri Julien)

Conference organization

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Marc Pell, SCSD, McGill
Shari Baum, SCSD, McGill
Laura Gonnerman, SCSD, McGill
Linda Polka, SCSD, McGill
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Nicolas Bourguignon (U de Montréal)
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Conference organization (continued)

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Special thanks

Office of the Vice-Principal (Health Affairs) and Dean, Faculty of Medicine

Dr. David Eidelman, VP (Health Affairs) and Dean of Medicine

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Faculty of Medicine Communications Office (D. Colby)

Academic Events Administrator (L. Teatero)

Professor Lydia White (McGill University, Department of Linguistics)

Centre for Research on Brain, Language and Music (CRBLM)
Lisa Coady

Student members of the Organizing Committee:
Kristina Kasparian and Stefanie Nickels

School of Communication Sciences and Disorders:
Karen Cavanagh (Administrative Manager)
Lili Saran
Antoinette Sommer
Miriam Daye
Sophie Vaillancourt

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