



# LSURC

Language Sciences Undergraduate  
Research Conference

January 19-20, 2018  
University of British Columbia, Vancouver, BC

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## Acknowledgements

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### **Special thanks to...**

- UBC Language Sciences: Ella Fund-Reznicek and the Language Sciences Steering Committee
- UBC Speech and Linguistics Student Association Executive Team
- SFU Linguistics Student Union
- Our conference volunteers

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Sponsors



DAVIDsTEA



### Conference Schedule

Day 1: Friday, January 19th	
4:30-5:00	Coffee & Registration
5:00-5:15	Opening Address
<b>5:15-6:00</b>	<u>Speaker Session 1 (IBLC 182)</u>
5:15-5:30	<b>Voices of UBC</b> <i>Presenter(s): Kate Curtis</i>
5:30-5:45	<b>Serial Template Satisfaction Account of Nominal Pluralization in Muyang</b> <i>Presenter(s): Yurika Aonuki</i>
5:45-6:00	<b>Haptic Feedback for Enhanced Speech Intelligibility</b> <i>Presenter(s): David Marino</i>
6:00-6:15	15 min break
<b>6:15-6:45</b>	<u>Speaker Session 2 (IBCL 182)</u>
6:15-6:30	<b>Perception Study of Strong and Weak Imperatives in English</b> <i>Presenter(s): Lydia Rhi</i>
6:30-6:45	<b>Dilma Rousseff: An analysis of cultural shifts within Brazil</b> <i>Presenter(s): Annika Westman</i>
6:45-7:30	Reception

Day 2: Saturday, January 20th	
10:00-	Coffee & Registration
<b>10:30-11:45</b>	<b><u>Plenary Round Table Session (IBLC 182)</u></b>
10:30-11:30	<b>Guess Who? The Language Familiarity Effect at UBC</b> <i>Dr. Molly Babel</i> (Dept. of Linguistics, UBC)
	<b>Project Dialect: Deep Learning for Language Variation</b> <i>Dr. Muhammad Abdul-Mageed</i> (School of Information, UBC)

	<b>How Do Languages Semantically Compensate for a Syntactic “loss”: The Case of Tense Phrase</b> <i>Dr. Neda Todorovic</i> (Dept. of Linguistics, UBC)
11:30-11:45	<i>Round Table Question and Answer</i>
11:45-12:00	<i>15 min break</i>
<b>12:00-12:30</b>	<u>Speaker Session 3 (IBLC 182)</u>
12:00-12:15	<b>Interior Reduplication in the St’at'imcets Diminutive</b> <i>Presenter(s): Isobel Wrinch</i>
12:15-12:30	<b>"No" she said, nodding: is there a multimodal advantage in cognitive control tasks</b> <i>Presenter(s): Dimitri Prica</i>
12:30-2:00	<i>Lunch break</i>
<b>2:00-3:30</b>	<u><b>Poster Presentation (IBLC 185)</b></u>
3:30-3:45	<i>15 min break</i>
<b>3:45-4:30</b>	<u>Speaker Session 4 (IBLC 182)</u>
3:45-4:00	<b>Inflection and Tone in the Nuer Nominal Paradigm</b> <i>Presenter(s): Terrance Gatchalian, Dimitri Prica, Freddie Young</i>
4:00-4:15	<b>Compound Word Processing in Aphasia</b> <i>Presenter(s): Kristen Peers</i>
4:15-4:30	<b>Representation of Women in Business Media: A Transitivity Analysis of Forbes, Fortune and Bloomberg Businessweek</b> <i>Presenter(s): Lucy Rak, Marianne Kim</i>
4:30-5:15	<i>Reception</i>
5:00-5:15	Awards Presentation & Closing Address
<b>6:00-7:30</b>	<b>Conference Group Dinner</b> BierCraft Wesbrook at UBC 3340 Shrum Lane, Vancouver

Poster Presentations:

Language Development

**1.Enhancing Adolescents' Communication Skills Through the Use of Irony and Sarcasm**

*Presenter(s): Frances Chen, Saman Fouladirad, Jessi Knutson, Harleen Gill*

**2.Language and Learning: The Effects of Language-Dependent Memory on Punjabi and Mandarin Speaking ESL Students**

*Presenter(s):Lindsay Alley, Sukvir Kaur*

Language Acquisition

**3.The Role of Co-verbal Facial Gestures in Speech Segmentation and the Acquisition of Word Order**

*Presenter(s): Erin Stadnyk*

**4.Tracking ethnicity-language co-occurrences in 10-month-old bilingual infants**

*Presenter(s): Gloria Ng*

**5.Liquid Distributional Learning in Infants: Comparing Unimodal vs Bimodal Phoneme Learning**

*Presenter(s): Maegan Mitchell*

Processing & Perception

**6.Cross-linguistic Lateral Bracing: An Ultrasound Study**

*Presenter(s): Felicia Tong*

**7.Audiovisual speech perception of native Hindi speaking infants**

*Presenter(s): Deepika Bajaj, Tarndeeep Samra*

Discourse & Society

**8.Use of “no” in discourse contexts**

*Presenter(s): Brittney Mallett, Bridgit Patchett, Naima Mansuri, Ivana Prpic*

**9.Creating lexical resources from social data**

*Presenter(s): Mohammed Falogah, Hazem Mslati*

## Abstracts

*Friday, Jan. 19th - 5:15-6:00pm*

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### Oral Presentation Session 1

#### **Voices of UBC**

Kate Curtis

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As a general rule Canadian English is typically divided into three dialects: (1) Newfoundland (or The Maritimes), (2) Quebec, and (3) everything west of Ottawa (Boberg, 2008). These parameters have been refined, but still all of Western Canada is lumped into the category of “the West” in standard descriptions of North American English Dialects (e.g., Labov, Ash, & Boberg, 2006). Recent work in the Pacific Northwest has shown that there may be very subtle differences between the English spoken by monolinguals in Vancouver and Seattle (Swan, 2016), which may suggest that the greater Pacific Northwest may share a cross-border regional dialect. Though these findings are a contribution to our understanding of Canadian and North American dialect diversity, there is still some question as to how representative these small samples are (e.g., Swan had only 20 Seattle and 19 Vancouver speakers). Moreover, these dialect descriptions are typically based on urban individuals and focus only on monolinguals, which makes the descriptions biased to the speech patterns of often Anglo-descended urban monolinguals. That being said, particularly in the lower mainland of British Columbia, Anglo urban monolinguals do not represent the linguistic and ethnic diversity of our communities. So one could imagine that descriptions such as the ones that exist today paint a much narrower picture of the local dialects than is actually representative of what residents in the lower mainland hear everyday. I have collected a sample of students through UBC’s Linguistics Outside the Classroom Program who come from diverse backgrounds and acoustically analysed their speech patterns. I had my participants read from a regionally relevant word list (largely designed by Dr. Alicia Wassink at The University of Washington for US-based Pacific Northwest dialects) and read a Canadian children’s story, namely *The Paper Bag Princess* (Munsch, 1980). The items analyzed and reported in this task were selected based on the likelihood that variation would be uncovered in the UBC student body. These environments were as follows: (i) TRAP vowel (/æ/) preceding voiced velar stops (e.g., words like bag, tag, etc.); (ii) foreign æ, where there is variability in the way speakers produce words like pasta, plaza, and drama; /u/ or GOOSE-fronting, where we see they the /u/ vowel being pronounced more rounded around consonants that are pronounced at the back of the teeth. These environments were able to give us insight into the variability of speakers who



are both native to the Lower Mainland as well as those who have come here to go to university. UBC promotes cultural diversity and one way to quantify it is to examine diversity is manifesting in the varieties of English spoken on campus. References: Labov, William., Ash, Sharon., Boberg, Charles. (2006) *The Atlas of North American English: Phonetics, Phonology, and Sound Change : a Multimedia Reference Tool*, Volume 1. Walter de Gruyter. Munch, Robert, Martchenko, Michael. (1980) *The Paper Bag Princess*. Annick Press. Swan, Julia T. (2016) *Canadian English in the Pacific Northwest: A Phonetic comparison of Vancouver, B.C and Seattle, WA*. University of Chicago. <https://works.bepress.com/julia-swan/16/> Wassink, Alicia. (2017) *English in the Pacific Northwest: The Northwest Dialects Project*. <https://zeos.ling.washington.edu/~PNWEnglish/>

### **Serial Template Satisfaction Account of Nominal Pluralization in Muyang**

*Yurika Aonuki*

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This paper proposes an analysis of nominal pluralization in Muyang (Smith 2010), a Central Chadic language spoken by 30,000 people in Northern Cameroon (Simons & Fennig 2017). My analysis focuses on a phonological process of pluralization observed in a subset of nouns in the language, which involves infixal reduplication. For example, a plural form of [àk.fǔ́ m] ‘mouse’ is [àk.fǔ́ .fǔ́ m], and a plural form of [mèd.rəs] ‘pig’ is [mèd.rə́.rə́ s]. The penultimate syllable of the plural form has an invariant CV shape. On the basis that it is only present in the plural form and that its segmental melodies are always obtained from the final syllable, I analyze this syllable as an infixal reduplicant.

In OT (Optimality Theory), reduplication is analyzed via constraints on Base-Reduplicant (BR) correspondence (McCarthy & Prince 2004), where a base is understood as “the phonological material to which the reduplicant is attached” (McCarthy & Prince 1994, p.6). Infixal reduplication, such as the one in Muyang, raises a potential question of what string counts as a base. For example, in order to derive [àk.fǔ́ .fǔ́ m] from [àk.fǔ́ m], there is an implicit assumption that the string [fǔ́ m] but not the entire string of [àk.fǔ́ m] is designated as the base.

In response to this issue, I adopt McCarthy, Kimper & Mullin (2012)’s STS (Serial Template Satisfaction). STS is a theory of reduplication developed in the framework of HS (Harmonic Serialism), which is a derivational theory based on OT. Importantly, STS rejects theoretical status of base, reduplicant, and consequently BR correspondence. Instead, what would be analyzed as BR faithfulness in OT are attributed to Copy(X) operations in STS, which copy a string of prosodic constituents Xs, such as segments and syllables (McCarthy et al., 2012).

There are two additional issues observed in the nominal pluralization in Muyang. One is various emergence of the unmarked effects (McCarthy & Prince 1994), one of which is unfaithful vowel quality; for example, the plural form of [bà.rà.mú.sà] ‘chief’s gown’ is [bà.rà.mú.sé.sā]. The reduplicant has [ə] instead of a low vowel [a] from the final syllable. The other issue is tonal overwriting; as seen in the above three examples, the plural form maximally preserves the tonal melody of the singular form from the left edge except that there is an invariant High Mid sequence at the right edge.

I propose that the underlying form of the plural morpheme is /  $\sigma$ ,  $\textcircled{\text{H}}$   $\textcircled{\text{M}}$  /, an unlinked syllable and floating H and M tones. I demonstrate that solely based on this underlying form and constraint ranking, my STS account of infixal reduplication extends to the attested emergence of the unmarked effects and tonal overwriting. In turn, success of this analysis without a presumption of a base raises a potential question for the status of BR correspondence.

### **Haptic Feedback for Enhanced Speech Intelligibility**

*David Marino, Karon Maclean, Bryan Gick*

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*It has been shown that direct, manual tactile cues can be used to enhance the intelligibility of speech (Gick 2008). We investigate the feasibility of enhancing the intelligibility of an environmentally degraded auditory signal via a small, wearable vibrotactile device. Devices like the Tactaid and Tickle Talker have been used to enhance speech intelligibility through multichannel vibrotactile stimulation in hard of hearing individuals (Galvin 2001). But little work has been done to address the feasibility of these devices in normal hearing individuals, particularly with single-degree-of-freedom (DOF) systems. Establishing the efficacy of a 1-DOF vibrotactile device is desirable because many people already own a 1-DOF vibrotactile device (such as a cellphone, or smartwatch), and it could therefore be easily implemented in such everyday objects. A popular method of tactile speech enhancement, the Tadoma method, has listeners place their hands on a speaker’s face and throat, and has been used to enhance speech intelligibility in participants who are of sound hearing (Gick 2008, Alcorn 1932). A major component of the Tadoma method is feeling the vibration of the vocal folds. We use a 19mm voice coil based vibrator (Tectonic Elements TEAX19C01-8) that simulates the laryngeal vibration as felt in the Tadoma method by vibrating to the pitch and amplitude of voiced utterances. After a calibration task, we ask participants to identify the content of phrases or words in noise while wearing the vibrator on either their fingers or at the suprasternal notch of the neck. We then will contrast actuator placement effects from with different vibration styles.*

Oral Presentation Session 2

**Perception Study of Strong and Weak Imperatives in English**

Lydia Rhi

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*Tandem language learning* is an informal approach to foreign language learning, which relies on exchanging conversation with a fluent partner. To date, research on tandem learning has been sparse — predominantly based on online exchanges and self evaluation. To better quantify the effectiveness of adult tandem language learning, this experiment is designed to empirically measure the progression of language production over the course of the 10-week program. This study focuses on French and Japanese learners, as these are the two most popular languages in the program that are not commonly spoken in Vancouver. Language levels were first assessed by the participant, the participant's partner, and an impartial native speaker, according to the Language Proficiency Index (LPI), and then production proficiency was measured in a two-part, audio-recorded, language elicitation task. Participants were tested at two separate times, once during the first week of the program, and again in the final week. Each session consisted of two parts: first, participants were asked to record the casual conversation that they engaged in during the first and last tandem sessions. Then they participated in a controlled, lab experiment, in which they viewed thirty 15-second, soundless video clips, and verbally gave the most detailed description possible of what took place in French/Japanese. Data from these videotaped interactions were then analyzed by fluent speakers, who analyzed reaction times, as well as tallied the types and tokens of words used (diversity of syntactic categories). Data are still being analyzed, but it is expected that quantitative results will suggest that participants improve in language production (e.g. through use of more diverse types of words, and faster reaction times), although not to a great enough degree to change their LPI score.

**Dilma Rousseff: An analysis of cultural shifts within Brazil**

Annika Westman

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Despite the sexism and misogyny of Brazilian culture (Encarnación, 2017), in 2010 Dilma Rousseff made history by becoming Brazil's first woman president. Her presidency is remembered for her historic election and what is known as the 'Dilma Effect' (Jalalzai & Santos, 2015; Encarnación, 2017). Despite her accomplishments in office, Rousseff's

presidency is overshadowed by her impeachment in 2016. Some speculate her impeachment resulted from a coup (Dijk, 2017), whilst others believe that her impeachment was a result of misogyny (Encarnación, 2017). Current research studies these effects, however, there lacks study in the ensuing cultural shifts: in particular, the change in cultural perceptions of Rousseff during her tenure.

To evaluate these changes, I completed a 3-level discourse analysis comparing language use similar to that of Brei & Böhm (2014).

Serving as a textual analysis, I found tweets on the social media site Twitter containing the words 'Dilma' and 'Dilma Rousseff' from the account of the most prominent Brazilian newspaper, Folha de São Paulo (<https://twitter.com/folha>). The tweets were collected from January 2010 to August 2017, a timeframe designed to accurately represent the potential changes in Brazilian culture. After collecting the tweets, I was able to use the software program AntConc (Version 3.4.4) to develop a list of the frequency of each word used in the data collected. From this list I determined 7 keywords to complete a process analysis of the data. These keywords were selected according to two criteria: they had to have been used in more than 5% of the total tweets, and they had to be either of a particular significance to the set timeframe, or, have been deemed likely to bear an opinion on Rousseff. Each tweet that contained one of these keyword was then analyzed as being considered either 'negative', 'positive', or 'neutral'. Finally, a social analysis was used to observe the changes in sentiments towards Rousseff, and its correlation to the timeline of Rousseff's presidency and impeachment.

My analysis of data shows a clear increase in negative sentiments towards Dilma Rousseff that mirrors her time in office; increasing after appointment and decreasing in quantity thereafter her impeachment. Perhaps more significantly, there was a change in the nature of these sentiments. The negative tweets shifted from criticizing Rousseff's role in government, to attacking her character and personal actions; something that can be linked with the prevalence of misogyny within Brazilian culture (Encarnación, 2017).

However it is important to note that there were limitations in the collection of the data. Most significantly, although there was observed trends regarding negative sentiments, the frequency of negative tweets was minimal. Because of this, the results must be viewed tentatively. However, despite methodological limitations, the data is important to help understand the cultural impact Rousseff had on Brazil. Nationally, it signifies the change in public perception of Rousseff, as public perception shifts from pride in her historic political accomplishments to a change of focus and regression into non-performance related, personal criticism which perhaps reflect Brazil's male-dominated cultural biases.

Plenary Round Table Session

**Guess Who? The Language Familiarity Effect at UBC**

*Dr. Molly Babel*

(Dept. of Linguistics, UBC)

Listeners are better at remembering voices when they speak familiar languages and accents, a finding referred to as the language-familiarity effect (LFE). In this talk, I'll discuss the results of a voice recall task that examined the Language Familiarity Effect for locally-accented and Mandarin-accented speakers of English in the context of the multicultural and multilingual population at UBC.

**Project Dialect: Deep Learning for Language Variation**

*Dr. Muhammad Abdul-Mageed*

(School of Information, UBC)

Millions of people from different backgrounds communicate over social media every day, presenting new opportunities and fresh challenges for linguistic research. On the one hand, social data are usually easily harvestable at low costs. On the other hand, the varying and continuously evolving contexts in which these data exist require working with methods accomodating dynamic modules. In this talk, I will discuss some of our ongoing work where we tackle these challenges while building scalable natural language processing systems. I will showcase "Project Dialect," an effort to develop massive-scale linguistic resources covering the whole Arab World. I will also illustrate how we exploit dialectal data to build distributed representation models that promise to enable processing Arabic dialects.

**How Do Languages Semantically Compensate for a Syntactic "loss":**

**The Case of Tense Phrase**

*Dr. Neda Todorovic*

(Dept. of Linguistics, UBC)

It's a matter of an ongoing debate whether Tense is a universal category, i.e. whether it is present in a syntactic structure of every language. Languages that have temporal morphology are standardly assumed to have Tense Phrase (TP); the debate revolves around languages that do not have temporal morphology. There are syntactic and semantic indications that, (at least some) such languages, lack a TP. An interesting question then is, how do we derive temporal interpretation in such cases. I will show, on the example of Serbian, that, even if TP is absent, aspectual and modal component come into play to deliver temporal interpretations. In other words, semantics is not affected.

**Interior Reduplication in the St'at'imcets Diminutive**

*Isobel Wrinch*

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The Lillooet language, or St'at'imcets, is an endangered Interior Salish language of the Northern family, that is spoken by the St'at'imc people in southern BC. The language is mutually intelligible to other Northern family Salish languages, with differences arising in certain lexical items (Jan van Eijk 1997).

The specific feature I will be looking at is how Lillooet uses interior reduplication as affixation to generate diminutive forms, and by what processes it is generated. The comprehensive grammar by Jan van Eijk (1997) mainly focuses on describing the patterns that arise from interior reduplication without giving an analysis on what drives this particular affixation. Examples of this affix mainly demonstrate reduplication of a single consonant, or a 'C-reduplication pattern', such as in [ʔáma] "good" +DIM = [ʔáʔma] "cute, pretty" and [qíqəl'] "weak" + DIM = [qéqqəl'] "rather weak". Some forms include a vowel in the reduplicant, such as in [sqláw'] "beaver" + DIM = [sqléləw'] "little beaver". Through observation of the dataset, St'atimcets C-reduplication copies the consonant preceding the most prominent peak, or the primary stressed vowel in the prosodic word. Infixal C-reduplication appears to ignore morphological boundaries, indicating that this type of reduplication evaluates the base of the word at the level of the phonemic melody.

The method of research for this analysis utilized Optimality Theory (OT), which is a linguistic model proposed in 1991 by Alan Prince and Paul Smolensky. OT ranks universal constraints to generate and evaluate the most optimal output (surface form) from an input (or underlying form). The use of OT provides a means to observe how the language prioritizes faithfulness to the input, to markedness on the output. In the case of C-reduplication, this interaction causes the exact shape and position of the reduplicant through what the grammar regards as "optimal". Faithfulness constraints were derived from McCarthy and prince (1999) and Markedness constraints were either taken from papers on similar problems, or created through observation of the data.

A general ranking was discovered using syllabification constraints alongside shape and position constraints. The position of the infixation is generated through maintaining base-edge faithfulness (Kurusu & Sanders, 1999) and motivating the reduplicant to go as

far left as possible without reduplicating left of the stressed vowel. The shape of the reduplicant is driven by the satisfaction of the morphological requirements, and the St'at'imcets syllable template. Vowel epenthesis of [ə] appears to co-occur with consonant reduplication to prevent violations of the syllable template when complex codas/onsets would else be formed. An attested complex coda/onset may not exceed more than two segments. Other phonological phenomena appears to be triggered by the St'at'imcets C-Reduplication, such as the alternation in base vowel quality and resonant glottalization. Base vowel quality changes so far have been unpredictable, however the epenthesized vowel is always predictable ([ə]). The glottalization of resonants has a somewhat predictable pattern. Insight to these phenomena is currently outside of the research question, but may be considered for future research.

**"No" she said, nodding: is there a multimodal advantage in cognitive control tasks**

Dimitri Prica

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Cognitive control tasks are those in which participants must suppress some of the stimulus they receive in order to succeed. The most famous example of such a task is the Stroop effect: in the original Stroop task, participants are asked to name the ink colour of a word that spells out a conflicting colour (e.g. If the word "green" is written in red ink, the correct response is "red"). This creates interference and slows the response rate of participants, who must mentally "swat away" the information borne by the written word. Conversely, when the colour word and its ink colour match ("red" written in red ink), participants name it faster than the same word written in (neutral) black ink.

It has been shown that bilinguals have an advantage over monolinguals in cognitive control tasks (especially Stroop-like tasks, where stimulus conflicts with stimulus, rather than with the response as in a Simon task. See Blumenfeld & Marian (2014) for an overview). In other words, bilinguals are better at handling the interference created by conflicting stimuli. This advantage is explained by a model of bilingualism in which all of an individual's languages are activated during any language use (see Kroll & Bialystok 2013): bilinguals must therefore routinely suppress task-irrelevant information (i.e. elements from the language(s) not in use) when using any of their languages.

The present study proposes to investigate whether multimodality, and specifically experience with learning a signed language, grants a further advantage to speakers in a Stroop-like task where the conflicting stimuli are spoken words and gestures. This investigation will be carried out by presenting monolingual, bilingual or multilingual non-signing participants, and bilingual or multilingual signing participants with four types of test items: spoken word only, spoken word accompanied by congruent gesture, spoken

word with conflicting gesture, and spoken word with unrelated gesture. Participants' response times will be measured and their linguistic background recorded via a questionnaire including the number and nature of their languages as well as their level of proficiency in each one.

It is expected that multimodal participants (signers) will outperform multilingual non-signing participants, who will themselves outperform monolinguals. If, however, signers were to perform more poorly than their non-signing counterparts, this may reveal something about the process of acquisition of a language using a different modality. On-par performance across signers and non-signing bi- and multilingual participants would show that multimodality does not increase the cognitive control advantage that comes with bilingualism.



Poster Session

Language Development

**1. Enhancing Adolescents' Communication Skills Through the Use of Irony and Sarcasm**

*Frances Chen, Saman Fouladirad, Jessi Knutson, Harleen Gill*

Child Study Lab, UBC

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Adolescents' communication styles are currently undergoing significant changes due to the proliferation of digital social media and the prevalence of text messaging. Research conducted with urban youth in BC, for instance, suggests that teenagers have become wary of engaging in direct, synchronous conversations involving personal matters (C.A. Cameron et al., 2017). Resilient youth around the globe, however, use humor, and more specifically, verbal irony as powerful tools in negotiating complex social situations (E.L. Cameron et al., 2013). Still, it is unclear whether youth generally make effective use of irony and sarcasm, as a certain level of pragmatic understanding is required in employing such speech acts. Our poster presents results from two studies that examined students' working knowledge of verbal irony and sarcasm. In the first study, 94 undergraduate students completed a questionnaire that prompted them to define irony, verbal irony, and sarcasm, and to provide an example of any of the three speech acts. Participants' responses and examples were then scored according to Dews et al.'s (1996) criteria for identifying irony and Martin's (2007) definition of sarcasm, with higher scores reflecting greater adherence. The values of the rating scale ranged from 0 (low) to 5 (high). The second study built on the findings from Study 1 by asking students to classify 10 examples as sarcasm, verbal irony, both, or neither, and assessed how well participants distinguished between ironic and non-ironic utterances, and sarcastic and non-sarcastic utterances. One hundred and four students completed this questionnaire, including some from the first study. In Study 1, participants' definitions of verbal irony (mean rating = 2.8 out of 5.0) were rated significantly stronger than sarcasm (mean rating = 1.4) (Wilcoxon-Mann-Whitney rank sum test [ $p < 0.001$ ]). However, the same test indicated no difference between definitions of verbal irony and ironic criticism ( $p = 0.24$ ). We also conducted a Wilcoxon-Mann-Whitney rank sum test of differences for the examples that participants generated. Verbal irony examples were not rated as very successful (mean rating = 2.4 out of 5.0), but they were significantly more highly rated ( $p < 0.04$ ) than the examples of sarcasm (mean rating = 1.4). The results from Study 2 are consistent with Study 1, and support Martin's (2007) claim that research participants do not reliably distinguish between irony and sarcasm, and often

include the former under the latter category. However, participants' responses to non-ironic and non-sarcastic examples demonstrate that they are adept at recognizing when irony and sarcasm are absent. Despite students' varied and idiosyncratic definitions of irony and sarcasm, they do not seem to exhibit a tendency for overextension. Consequently, the strategy of incorporating considerations of irony into programs of support for communication enhancement might be relatively attractive implementations, as students find the study of such speech acts to be interesting (E.L. Cameron et al., 2017). The benefit of improving interpersonal communication skills among youth by them exploring the power of verbal irony and other interesting speech acts invites further investigation.

## **2. Language and Learning: The Effects of Language-Dependent Memory on Punjabi and Mandarin Speaking ESL Students**

*Lindsay Alley, Sukvir Kaur, Sterling Keful*

Langara College

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According to the theory of language-dependent memory, recall is facilitated by a match between the language of encoding and the language of retrieval. While this has been investigated regarding autobiographical memory (Marian & Neisser, 2000; Marsh, Kanaya, & Pezdek, 2015), less research has been done that investigates language-dependent recall of information rich passages (Marian & Fausey, 2006). Second language English students must regularly recall semantic information encoded from passages in textbooks. Some may resort to translating those passages into their native language to ease their understanding. This may not, however, be an ideal strategy.

In this study, we examined students' recall of textbook-like passages, endeavouring to recreate the situation they experience in college exams. We hypothesized that students would score higher on a recall test of information from the passages when the language of encoding matched the language of retrieval, and that this effect would be stronger for the students whose abilities in both languages were balanced. Our participants were 45 bilingual students with Punjabi or Mandarin as their native language. The students read two passages, which contained fictional stories regarding history and biology, in either their native language (Punjabi or Mandarin) or in English. They were given a maximum of 10 minutes to read. After reading, as a distractor task, students were given a piece of origami paper and asked to follow a six minute instructional video. They were then given the recall test, which consisted of 24 short answer questions on the information from both passages. This test was given to all participants in English, to imitate their situation as students at an English speaking college. They had a maximum of 15 minutes to complete this test. Participants also completed the Bilingual Language Profile (Birdsong, Gertken, &

Amengual, 2012), a measure of language balance for bilinguals that yields a dominance score indicating the relative degree of fluency in both languages.

For the data as a whole, there was not a significant difference between those who read in English (the match group) ( $M = 15.35$ ) and those who read in their native language (the mismatch group) ( $M = 12.86$ );  $t(43) = 2.02$ ,  $p = 0.06$ . This difference was significant for a one-tailed t-test at  $p = 0.03$ . Dividing the data based on language dominance scores did not alter this, and there was not a significant difference between the match ( $M = 15.75$ ) and mismatch ( $M = 12.68$ ) conditions;  $t(19) = 1.42$ ,  $p = 0.17$ . We did find a significant difference between the match ( $M = 16.27$ ) and mismatch ( $M = 12.69$ ) conditions when we examined the Punjabi speaking students separately;  $t(29) = 2.34$ ,  $p = 0.03$ . By contrast, for the native Mandarin speakers, there was not a significant difference between the match ( $M = 13.63$ ) and mismatch ( $M = 13.33$ ) conditions;  $t(12) = 0.12$ ,  $p = 0.90$ . We conclude that language-dependent memory effects may vary significantly between languages, therefore future research should examine languages separately or concurrently for the purpose of comparison.

### Language Acquisition

#### **3.The Role of Co-verbal Facial Gestures in Speech Segmentation and the Acquisition of Word Order**

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Word order is crucial in helping infants learn the overall grammatical structure of their language. If infants know the word order characteristic of their language, they could use this information to find constituents and assign them grammatical roles, based on where these constituents occur in the utterance (Gervain & Werker, 2013).

Infants have been shown to integrate two sources of information that could facilitate word order acquisition. They are sensitive to the phrasal prosodic patterns of their language, and can track frequency information of function versus content words (Gervain & Werker, 2013). Functors, such as prepositions (in) and determiners (the), occur with a very high frequency in speech, while content words, such as nouns or verbs, occur much less frequently. Importantly, their order varies across languages; in English, phrases are typically functor-initial (to Tokyo) while other languages like Japanese are functor-final (Tokio ni).

Infants also naturally integrate the auditory and visual information of speech as it is presented. This visual information includes co-verbal gestures such as head nods, which are not required to produce speech sounds but which are nonetheless present during production. Co-verbal gestures facilitate processing sounds and words, but whether they

can aid in the segmentation of speech into phrases is yet to be determined.

In this study, 4- and 8-month-old English monolinguals were tested to see how co-verbal information in concordance with prosodic and frequency information impacted speech segmentation. Specifically, will they facilitate speech segmentation into phrase-like units that match the word order of the participant's native language?

An artificial language was created in the style of Gervain et al. (2013) and Gervain & Werker (2013). This grammar had alternating frequent (a, b) and infrequent (X, Y) elements (mimicking functors and content words respectively), in the structure aXbY, with infrequent elements being lengthened to mimic the phrasal prosody characteristic of English. This aXbY unit was manipulated to create a 4 minute long stream (...XbYaXbYaXbY...), which was presented to infants in a familiarization period. The exact beginning and end points of the stream were ramped in amplitude to obscure which syllable type the stream began or ended with. This allowed for interpretation as either a frequent-initial (aXbYaXbY...) or a frequent-final (XbYaXbYa...) language. Infants simultaneously watched an avatar, which produced head nods with peaks that were either aligned to the longer (infrequent) segments, or misaligned, peaking in the shorter, frequent elements. They were then presented with auditory-only test phrases that were either frequent-final or frequent-initial in a preferential head-turn procedure.

It was expected that English infants, learners of a functor-initial language would parse the speech as frequent-initial and thus look longer to the frequent-initial test items. Results showed no preference for either word order, surprising given previous literature (Gervain & Werker, 2013). This is suggestive of a fatigue-effect and perhaps indicates that the present visual scene might have been too complex for infants of this age.

#### **4. Tracking ethnicity-language co-occurrences in 10-month-old bilingual infants**

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It has been well-documented that when learning language, bilingual infants learn their languages independently of each other. However, how they perform this feat is largely debated and not yet well-understood. It has been shown previously (Kandhadai, Danielson and Werker, 2014) that bilingual children are able to track co-occurrences of relevant cues as a mechanism for this. It has also been shown that bilingual children are more attentive to the faces of speakers as compared to monolinguals (Sebastián-Gallés, N., Albareda-Castellot, B., Weikum, W., & Werker, J.F., 2012) as an example of one such cue. In the present study, we test the hypothesis that bilinguals track ethnicity-language co-occurrences, which allows them to differentially activate one language's processing system over the other to match the language that the child often experiences accompanying

a particular ethnicity. To test this hypothesis, 67 English learning monolinguals and 64 Chinese-English bilinguals with a mean age of 10 months were recruited and tested using in the Switch procedure (Stager and Werker 1997). In the first phase of this procedure, each infant was shown either 3 Caucasian faces or 3 Asian faces in order to prime the corresponding language processing system. Then, the children were habituated to repetitions of either one Chinese or one English language sound that is crucially in one language but not the other. After the child had been habituated, as determined by decreased looking time and attention, the test phase began. In one trial, children heard the same phoneme they had been habituated to, while they heard a different phoneme in the same language as the one they had heard previously in the switch trial. Children's ability to discriminate between sounds was operationalized as the increased looking time to switch test trials as compared to same test trials. It was found that our initial hypothesis was partially true. Chinese-English bilinguals discriminated between Chinese sounds better when they were primed with Asian faces. Interestingly, exposure to Caucasian faces did not improve bilinguals' discrimination of English. Monolinguals did not show improved discrimination of sounds from being shown faces of either ethnicity.

### **5.Liquid Distributional Learning in Infants: Comparing Unimodal vs Bimodal Phoneme Learning**

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Younger infants can discriminate between nearly all phonetic contrasts (Eimas, Siqueland, Jusczyk & Vigorito, 1971; Streeter, 1976), and gradually lose this ability by 12 months (Werker & Tees, 1984). Rather than suggesting an innate ability to one's native language, research supports that experience is crucial in maintaining relevant categories and collapsing less relevant categories. This learning of categories is thought to be done through statistical learning where infants pick up on the sound patterns of their native language (e.g. Kuhl, 1993).

In bimodal distributions, infants learn to be more sensitive to differences in sounds whereas infants hearing unimodal distributions learn to ignore these differences and group phonetic sound together. For example, the contrast between the liquids [ɹ] and [l] occurs as a bimodal distribution in English but as a unimodal distribution in Japanese. Work by Maye, Werker and Gerken (2002) demonstrated just how fluid phoneme categories are prior to the closing of the sensitive period. Infants aged 6-8 months were presented with an eight-stimuli continuum in either a bimodal or unimodal distribution. Sound preference testing then revealed that infants in the bimodal group learned to discriminate between the stimuli whereas infants in the unimodal group did not. Results suggested that even a short

exposure has been enough to alter phonetic learning.

We propose an EEG study where 5-month-olds are presented with a 160-token continuum of either a unimodal or bimodal distribution of the liquids [ɹ] and [l]. Infants were then presented with an odd-ball task comprised of [ɹ] and [l] sounds at the very end of the continuum, similar to those used in English. We hypothesize that infants in the bimodal condition will learn that [ɹ] and [l] are different and show greater mismatched negativity (MMN) in the testing phase, where MMN represents a measure automatically elicited by the brain in response to discriminable change (Näätänen et al., 1978). If our study follows the results of past research (Maye, Werker & Gerken, 2002; Yoshida, Pons, Maye, & Werker, 2010), short exposure to a unimodal distribution may be enough to change 5-month-olds expectancies. We thus also hypothesize that infants in the unimodal condition will learn to ignore the differences between [ɹ] and [l] and group them in the same category, generating a much smaller MMN.

With its sound continuum, this study suggests a sound environment more relevant to infant's real-world environment as phonemes may vary between different speakers, rates of speech and even contexts (Khul, 2004). If the results support our hypotheses, we would provide EEG evidence for Maye, Werker & Gerken's study (2002), with a new sound contrast and in even younger infants.

### Processing & Perception

#### **6. Cross-linguistic Lateral Bracing: An Ultrasound Study**

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#### **Background**

Bracing describes a tongue posture in which the tongue is in contact with a rigid vocal tract surface. Lateral bracing, in particular, refers to when the sides of the tongue contact the roof of the mouth, along either the upper molars or hard palate. While some researchers have proposed that tongue bracing during running speech is simply incidental contact (Cheng et al., 2007; Stone, 1991), recent evidence suggests that bracing may serve as a form of support during production of speech (Gick et al., 2017).

Previous studies have used Electropalatography (EPG), a method that measures contact of the tongue to the palate, has often been used to investigate bracing during speech. For example, one study found that bracing occurs in both children and adults (Cheng et al., 2007). Gick et al. (2017), also using EPG, showed that lateral bracing was present in native English speakers throughout most of their speech, aside from some productions of /l/ and

low vowels; furthermore, 3D modelling of the tongue indicated that the bracing posture requires continuous muscle activation. These results indicate that lateral bracing is both pervasive and active during speech. However, as previous studies have generally focused on English speakers and included a low number of participants, it is yet to be seen whether these findings will generalize to more speakers, or across languages.

Thus, this study aims to further examine lateral bracing cross-linguistically at a larger scale. Following Cheng et al. (2017), who found evidence of lateral bracing in six native speakers of different languages, ultrasound technology is used to image tongue movement. Taking the position that lateral bracing is fundamental to speech production, we hypothesize that tongue bracing will be present across languages.

### Methodology

Native speakers of English, Cantonese, Mandarin, Korean, Spanish, were asked to read translated “North Wind and the Sun” passages in both English and their native language three times each. An ultrasound probe positioned under their chin captured continuous images of the tongue at a cross-section at the upper back molars, showing movement of both left and right sides of the tongue while they read the passage. Both ultrasound video and the accompanying audio were recorded.

### Data Analysis and Results

To analyze the lateral tongue movement in the ultrasound videos, we used the Flow Analyzer software (Barbosa, 2013) to track and measure the magnitude of vertical movement at different positions on the tongue over time. In comparing the middle, left edge and right edge of the tongue, preliminary results show that both sides move less than the middle throughout the duration of the read speech. Moreover, while the movements of the left and right sides of the tongue are positively correlated, both sides are less correlated with the movement at the centre of the tongue. Taken together, this suggests that the two sides of the tongue are more stable than the middle, providing support for lateral bracing during speech in different languages.

## **7. Audiovisual speech perception of native Hindi speaking infants**

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Speech perception in infants is a multisensory process, namely infants use auditory and other modalities such as vision to acquire speech (Danielson, Bruderer, Kandhadai, Bateson, & Werker, 2017). Furthermore, past research has shown infant’s ability to

distinguish sounds regardless of their prior experience with a language. For instance, infants before six months of age are able to discriminate the dental [d<sub>l</sub>] vs. retroflex [ɖ] in the Hindi language, even if they are not growing up with Hindi and hence are not hearing the distinction. In a pattern called perceptual attunement, discrimination of minimally different non-native speech sounds declines from six months to one year of age (Werker & Tees, 2002), whereas discrimination of native speech sound differences improves. Additionally, infants are able to match phonetic information to lips and voice, and this can be seen in babies as young as two months (Patterson & Werker, 2002). However, it is not understood whether infants with prior experience with a language are better able to detect a mismatch in vocal and lip presentation. Thus, our research aims to determine whether infants hearing Hindi are better able to detect a mismatch than those hearing English. In our study, Hindi-exposed six, nine and eleven month old infants are being recruited through the Early Developmental Research Group database in Vancouver, through social media sites and through community organizations. The parents report that their infant is hearing approximately 50-100% of one of a specified set of South Asian languages. During the experiment, infants sit on their caregiver's lap and watch a screen in which they see a video of a speaker producing [d<sub>l</sub>a] and [ɖa] repetitively. The first phase is the incongruent familiarization task, in which the audio and visual is mismatched. In the next phase, a still checkerboard is shown while infants hear two kinds of trials: in non-alternating trials infants hear the same syllable over and over (e.g. [d<sub>l</sub>a] [d<sub>l</sub>a]....) and in alternating test trials infants hear both syllable types (e.g. [d<sub>l</sub>a] [ɖa] ...). Discrimination is evident if infants look longer to the checkerboard in one trial type over the other. Using a Tobii eye tracker, we will calculate the time infants look at each region of interest (mouth and eyes) during the first phase, and how much they look at the checkerboard during the test phase. We predict that if infants detect the mismatch, they will look longer to the speaker's mouth region than they eye region, and that this differential looking will increase between 6- and 11-months of age as infants become more expert in their native language. Furthermore, we predict a correlation between looking to the mouth in the first phase, and longer looking to alternating vs non-alternating trials in the test phase. Results will be compared to those previously published with English-learning infants, to look for effects of perceptual attunement. This study will aid in understanding speech perception in infants as a multisensory process and its role in perceptual attunement of one's native language (Danielson et al., 2017).



**8. Use of “no” in discourse contexts**

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With a word as versatile as “no”, a negative response particle, it is often difficult to define with unified meaning. We argue that the meaning of “no”, in English, is context dependent; that is, the meaning of the word “no” is sensitive to the environment it is used in. For our purposes, we will define environment as both the syntactic and semantic conditions surrounding “no” in discourse, as well as taking at-issue content into analysis. There are two parts to look at within discourse, the utterance of speaker A and the response of speaker B. Specifically, we are interested in what happens to the at-issue content when speaker B’s response is “no”. Conducting a meta-analysis of corpora data, utterances heard in modern media and through natural observation, we aim to ask in what discourse contexts people feel pressured to act on “no”?

Previous research distinguishes between descriptive and metalinguistic negation. Descriptive negation is previously defined as a mechanism to “describe how things are (not) in the world” (Pitts, 2001, p. 346). Furthermore, Horn (1985) states descriptive negation “constitutes a comment on facts and preserves presuppositions” (p. 157). Contrastingly, metalinguistic negation rejects utterances from being included in the common ground – where actions are built on (Clark, 1991), and additionally has the capability to be applied to pronunciation, presupposition and intonation (Geurts, 1998). Metalinguistic negation “is discourse-oriented and focuses on linguistic and/or interpretive features of the utterance” (Pitts, 2001, p. 347). Our focus is within metalinguistic negation, as we hope to discover the use of “no” in discourse contexts.

It has been found that “at-issue content of a speaker’s utterance can be accepted or rejected” (Tonhauser, 2012, p. 3) by the receiver of the utterance. If the at-issue content is accepted with the use of “no”, as in 1a, or rejected with the use of “no”, as in 1b, the context may be managing information, where the “no” can confirm a belief or be ignored.

(1) The lake is really deep.

a. No, it’s true.

b. No, I think it’s shallow.

However, in urgent contexts, as in 2a, “no” is regarded more like a command and may elicit an action or response from the other participant in the discourse. From here on out, we are defining urgent “no” as a response that appears in contexts where the speaker says “no” with confidence or authority.

(2) The staircase is slippery.

a. No, it is!

We hypothesize that "no" used in urgent contexts is much more likely to elicit an appropriate action or response from the listener compared to the use of "no" to manage information. This follows from the Speech Act Theory, where Searle (1969) defines an illocutionary force as "saying something and meaning it"; in other words, illocutionary force is essentially the motivation behind why a speaker says something. Further, illocutionary force is connected to "the consequences or effects such [speech] acts have on the actions, thoughts, or beliefs" (Searle, 1969, p. 25) of the other participant in the discourse.

### **9. Creating lexical resources from social data**

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Millions of people from different backgrounds communicate over social media every day, presenting new opportunities and fresh challenges for linguistic research (Herring, 2008; Tagliamonte, 2016; Varis & van Nuenen, 2017). On the one hand, social data are usually easily harvestable at low costs. On the other hand, the varying and continuously evolving contexts in which these data exist require working with methods accomodating dynamic modules. In this work, we explore the utility of using social data from the Twitter platform to create lexical resources for a range of regionally-defined Arabic varieties. We depend on geo-location and message cues (e.g., hashtags) to help decide where a data point is coming from. We find that although such measures are useful, they fall short to varying degrees of accurately capturing the variety to which a tweet belongs.

We interpret our findings against the sociopolitical backgrounds of Arabic communities.

Oral Presentation Session 4

**Inflection and Tone in the Nuer Nominal Paradigm**

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In a recent paper, Baerman (2012) describes the Nuer nominal paradigm as “[violating] some basic assumptions about the nature of syncretism and inflectional classes, and so suggest[ing] that some revisions to our notion of morphological structure are in order” (Baerman 2012, p. 467). Such a claim is based on the complexity of nominal inflection which, as it is currently described, falls into 24 distinct patterns. This paper reexamines some of the generalizations in Frank (1999), upon which Baerman based his analysis. More recent work on Nuer (Gjersøe 2016a, 2016b, 2016c) demonstrate the necessity of including, or at least considering, tonal information. Preliminary findings presented below continue this demonstration, showing cases where the only phonetic discriminator between two inflectional forms is a reliable pitch difference.

Consider the case below, where the only overt phonetic cue between the nominative singular and the nominative plural is pitch, transcribed in (1); we give both transcriptions and pitch traces for the examples presented.

Our conclusion for the case above is that the singular form of ‘work’ bears a low tone and that the plural bears a high tone. Crucially, it is not the case that these forms are nominals, nor is it the case that the plural inflection is phonologically null; in such cases, a consideration of both segmental and tonal information is necessary to understand the nominal inflection.

The implications that these preliminary findings have on the analysis of the Nuer nominal paradigm is considered. One immediate implication is that the analysis of segmentally non-alternating nominals cannot be considered without tonal information. While the inclusion of tonal information is significant in understanding the nominal inflectional paradigm, the extent to which the inclusion of tonal information will illuminate patterns in this apparent paradigmatic chaos remains an open and exciting question.

**Compound Word Processing in Aphasia**

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Compound word processing was examined between participants with normal language processing (N = 34) and participants with aphasia (N = 34) to investigate if persons with

aphasia process compound words differently than the normal population, this was done using an experimental design. The Morphological Assessment Project (MAP) was used to investigate how persons with aphasia derive meaning from compound words and how they process compound words differing in semantic transparency (Libben, 2012). A factorial ANOVA with a between subjects design was conducted on the tabulated results of two subtests of the MAP, this analysis looked specifically at accuracy and reaction time on the subtasks. These results demonstrated that there is a significant difference in how the aphasia group and the normal group processed compound words; additionally, there was a significant difference in how different levels of semantic transparency affected speed and accuracy in processing compound words for both groups. These results indicate that people with aphasia are comprehending different semantic information from compound words than a person with normal language processing.

**Representation of Women in Business Media: A Transitivity Analysis of Forbes, Fortune and Bloomberg Businessweek**

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Over recent years, despite the growing percentage of women in the business sector (United States Department of Labor, 2016), women have been underrepresented in business media. This lack of representation influences women's entrepreneurial aspirations (Eikhof, Summers, & Carter, 2013) and impedes gender equality, opposing the United Nations Sustainable Development Goal Five (Hujo & Braumann, 2016). The discourses on women in business media have been categorized as mostly "patriarchal" (Lamsa & Tiensuu, 2002), and research from past decades has evaluated how often women are featured in business media (Greenwald, 1990), as well as how frequently they are cited as information sources (McShane, 1995). However, to our knowledge, no current analysis of the representation of women in business media exists. We address this lacuna by employing a Transitivity Analysis modelled on Bartley and Hidalgo's use of Halliday's Theory of Transitivity (Halliday, 2014) to examine three top business magazines: Forbes, Fortune, and Bloomberg Businessweek. We analyze the first issue of September of each magazine over the last three years (2015, 2016, and 2017). Specifically, we compare the grammatical processes involving women to those involving men. Furthermore, we record the relative frequency at which women are mentioned in articles compared to men, as well as the number of mentions of women per article. This provides a detailed exploration of the differences in the depiction of women and men in business media in the 21st century, in the hope of increasing the awareness of business magazines, allowing them to reexamine how they represent women.

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