LSURC

Language Sciences Undergraduate Research Conference

LANGUAGE THROUGH EDUCATION

February 7-8, 2020
University of British Columbia, Vancouver, BC

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About LSURC

We are proudly partnered with the UBC Language Sciences Initiative and UBC's Speech and Linguistics Student Association (SALSA), who tirelessly support our committee's efforts to organize this event.

Established in 2017 from a committee of five Linguistics and Speech Science undergraduate students, the Language Sciences Undergraduate Research Conference (LSURC) was formed with the goal of creating an opportunity for undergraduate students to explore language and communication research with an interdisciplinary perspective.

While inaugurated at UBC Vancouver, we attempt to expand our reach to undergraduate students studying in other disciplines and at other institutions in order to facilitate undergraduate engagement with language research.

Our committee (composed of undergraduate students across disciplines) meets weekly from September until February to plan this two-day event. We are excited to have you all attend and hope LSURC is an eye-opening, inspiring, and rewarding experience.

2020 Conference Theme

Language Through Education: *How can we apply linguistics and language science theories to educational practice?*

Language and education work like a two-way street: they influence each other, shaping the way we think and forming our ideas which can be shared amongst others. This intellectual growth facilitates our ability to connect with individuals in various settings – institutions, classrooms, even in mundane conversation. The different aspects of language play an integral role in communication, enabling us to gain insight and probe into the countless areas of academia and research. This coherence feeds accomplishments in knowledge dissemination, allowing us to learn and prosper in our fields of interest.

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Conference Schedule

Day 1: Friday, February 7th	
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4:45-5:45	Speaker Session 1 (FSC 1005)
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5:00-5:15	**The development of the quantifier "some" in children: Can intonation focus attention to the "but not all" implicature?** *Presenter(s): Paris Gappmayr*
5:15-5:30	**Text analytics for topic modelling** *Presenter(s): Darius Muglich*
5:30-5:45	**Factors (not) influencing Spanish spirantization** *Presenter(s): Gracellia Purnomo*
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6:00-7:00	Speaker Session 2 (FSC 1005)
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6:15-6:30	**Rapid prosodic transcription: Analyzing Gitksan speaker intuitions about prosody** *Presenter(s): Rosemary Hu*
6:30-6:45	**Pitch variation in Umuahia Igbo** *Presenter(s): Chloe Farr*
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9:50-10:10	**Embodied pronunciation teaching** *Dr. Bill Acton* (School of Education, TWU)
10:10-10:30	**Promoting multilingual literacy and reader identity: Global Storybooks and open technology** *Dr. Bonny Norton* (Dept. of Language & Literacy Education, UBC)
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11:30-11:45	**Mom, talk to me in your mother tongue: SES and heritage language maintenance of East and South Asian Canadian community** *Presenter(s): Jingshu Yao*
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3:15-3:30	**Recent developments in eNunciate!: Ultrasound imaging application to L2 pronunciation instruction** *Presenter(s): Demitri Lau, Elizabeth Klimova*
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4:15-4:30	**Aspect and a new focus particle in Dàgáárè** *Presenter(s): Dominique Bowden, Bailey Trotter, Linda Du, Laura Griffin*
4:30-4:45	**Children's perception of foreign accented consonant clusters** *Presenter(s): Lauren Denusik*
4:45-5:00	**Crossing the language boundary: Syllable fusion in Cantonese-English code-mixing speech** *Presenter(s): Ivan Fong*
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Poster Presentations:

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The phonology of flapping in non-words
Presenter(s): Larissa Melville

The effects of hearing experience on early voice and word recognition
Presenter(s): Katy Chen

A review of syntactic fieldwork In Wenzhounese by Hu et al
Presenter(s): Pan Zhengyuan

Can sentiment and context be used to detect abusive language online effectively?
Presenter(s): Saffrin Granby

Neural correlates of fast mapping
Presenter(s): Deea K. Dev, Gurwinder Sidhu

Korean A-not-A questions: Is it neutral or not?
Presenter(s): Christine Song, Ivan Fong, Amanda Eliora

Distributional learning of non-native Hindi stop contrasts in 5-month-old infants
Presenter(s): Hayley Wroot

Automated rehabilitation agent for articulation therapy
Presenter(s): Felicia Tong

Hearing accents in noisy environments
Presenter(s): Christina Sen

How we determine the lexical categories of the internet slang Pog
Presenter(s): Jarrick Pang

Session 2

A critical look at deep-learning models for emoji sentiment analyses
Presenter(s): Veronica Chen, Lovira Putri, Tarang Mahapatra, Manu Mahadevan Koipallil

Canadian raising in slang
Presenter(s): Kevin Tyson

Variation in spatial deictic words in varieties of Spanish
Presenter(s): B. Paris Fleming, M. Angelina Lloy

It's tricky to say: Understanding how school aged children produce multisyllabic words
Presenter(s): Gavina Sian, Karen Hoang

An optimality theory analysis of diminutive suffixation of Chengdu Mandarin
Presenter(s): Bingqing Yu

Nasality contrastiveness in Pirahã
Presenter(s): Isabel Salomon

Voice agreement and ay-fronting in Tagalog recent perfectives
Presenter(s): Jan Urquico

Demonstrative blocking of relative clause-internal reflexives in Mandarin Chinese
Presenter(s): Jesse Hawker

Xe went to the store: Are gender-neutral pronouns breaking into a closed syntactic category?
Presenter(s): Amanda C. James

The development of lexical-semantic relationships in mono and bilinguals: A replication
Presenter(s): Vera Mueller

Temporal modifications in infant-directed speech: A cross-cultural comparison of Lenakel and English
Presenter(s): Paula Correa

Abstracts: Oral Presentations

Friday, February 7th, 2020. FSC 1005.

Speaker Session 1

Reading ability of children with lazy eye

Laveniya Kugathasan, Marita Partanen; Violet Chu; Christopher Lyons; Deborah Giaschi

Keywords: reading; visual development; amblyopia; strabismus; psychoeducational tests

Amblyopia, commonly referred to as lazy eye, is a developmental visual disorder that affects roughly 4% of the population. Clinically, amblyopia is characterized as poor visual acuity in an otherwise healthy eye that cannot be corrected with lenses. It is often caused by untreated eye misalignment (strabismus), unequal optical problems between the eyes (anisometropic), or both (aniso-strabismus).Our research, and that of others, has shown that amblyopia also manifests in other aspects of vision, including motion perception (reviewed in Meier & Giaschi, 2017) and depth perception (reviewed in Levi, 2006), that involve both eyes and may not improve with standard amblyopia treatment (Giaschi et al., 2015; Birch & Wang, 2009). Poor reading ability in children with amblyopia has also been reported (reviewed in Webber, 2018), although the evidence is mixed. In addition, previous findings are difficult to interpret because standardized psychoeducational tests were not used to evaluate reading ability. Without standardized tests, comparisons cannot be made to a large normative sample, which is critical for recognizing the practical consequences of compromised reading ability as well as determining eligibility for reading supports at school. Therefore, this study administered standardized tests to assess binocular reading performance in children treated for amblyopia compared to: (1) the large normative sample used to obtain standardized reading scores, and (2) the types of control groups used in previous studies. Children treated for strabismic or anisometropic amblyopia (N=14) were compared to children treated for strabismus without amblyopia (N=12) and to control children with healthy vision (N=39). Visual acuity, intellectual functioning, oral single-word reading (TOWRE-2), and oral paragraph reading (GORT-5) were assessed. Visual acuity did not correlate with reading scores in the patient groups. Although the amblyopia and strabismus groups showed significantly lower single-word accuracy compared to the in-study control group, the mean performance of all three groups was within the average range of the normative sample. Within the groups, however, there were six children (four with amblyopia, two with strabismus) who fell below the average performance range of the normative sample on the single word reading task. Four of those children also demonstrated below-average performance in paragraph reading. These results suggest that strabismus and amblyopia could impact reading ability even following successful treatment, thereby giving reason to consider the benefit of reading supports at school for affected children. This study highlights the need for an updated definition of amblyopia.

The development of the quantifier "some" in children: Can intonation focus attention to the "but not all" implicature?

Paris Gappmayr

Keywords: quantifiers; implicatures; acquisition; intonation; pragmatics

As listeners, we expect speakers to be helpful and provide us with the most relevant and correct information; therefore, when a speaker uses "some", most adults infer that if they meant "all" then they would have said "all"; therefore, they must mean "some, but not all" (Grice, 1989). However, research has shown that children struggle to understand the "but not all" implicature until late childhood (eg. Hurewitz et al., 2006; Tomilson et al., 2017). In an experiment conducted by Hurewitz et al. (2006), children were presented with 4 images and asked to select the one that "best-matched" the sentence they heard. Upon hearing the sentence "the alligator ate some of the cookies", 3-year-old children selected a picture of an alligator holding four cookies next to an empty plate; an image that adults unanimously selected as the alligator having all of the cookies. There has been debate about how to interpret these results; is it the case that children do not yet understand the "but not all" implicature, or is the task confusing to them? There are two potential variables that may cause children to achieve adult-like interpretations earlier: defining the set and using intonation. If children believe the set of all cookies in question is larger than the 4 in the image presented, then their interpretation is technically correct. By defining the set in the sentence prompt (eg. "the alligator ate some of the cookies from the plate"), children will be given a clearer context for the task. Alternatively, by using stress intonation on the quantifiers ("eg. the alligator ate some of the cookies"), children's attention will be drawn to the use of the quantifier and may cause them to reason about words that could have been said but weren't (Tomilson et al., 2017). This may lead them to reason about the scalar implicature of the word some and reach the "but not all" implicature earlier. In the present study, these variables are manipulated in a between-subjects design using four total condition: (1) a control condition (same presentation as in the Hurewitz et al. study), (2) a defined set condition, (3) an intonation condition, and (4) a condition where both intonation and a defined set are used. This design allows for analysis of which variable (defined set vs. intonation vs. both) is most faciliatory for the implicature. If children achieve the "but not all" implicature earlier using conditions 2-4, then it indicates that they understand the implicature but that previous tasks have been confusing. However, if children are still unable to achieve the implicature using these conditions, then there are additional factors that will need to be investigated.

Text analytics for topic modelling

Darius Muglich

Keywords: Information Visualization; Natural Language Processing; Topic Modelling; Ontology; Text Analytics

With the advent of web-based social media, there has been a mass generation of online conversations, coming from various online forums. However, the blog mediums for which these conversations are hosted often provide little support in exploring and navigating through the data in ways the user might desire, such as in finding conversation topics pertinent to them, or to find the undertones of affective states and subjective information pertaining to a conversation. To address this problem, we present visual text analytic systems that tightly integrate interactive visualization with text mining to fulfill information needs of users in exploring conversations. The primary natural language processing (NLP) technique we use for this text mining is that of topic modelling, the task of statistically identifying topics from a set of texts. Coupled with this, our interfaces allow for the comparison of multiple topic models; indeed, it is generally necessary to have the collaboration of both NLP researchers and domain experts to make for an effective evaluation of topic models. Our interfaces leverage information visualization to allow for this inter-model juxtaposition, and assist with the evaluation. The interfaces we design integrate attributes of the visual topic model frameworks of Enamul Hoque and Giuseppe Carenini [1], and Amon Ge [2], allowing for the simultaneous capture of the topic alignment of texts, as well as the comparison of multiple topic models mapped against a domain ontology. As such we produce an efficacious system for understanding large-scale conversational data at a heretofore unexplored level.

Factors (not) influencing Spanish spirantization

Gracellia Purnomo, Gloria Mellesmoen, Bryan Gick

Keywords: speech sciences, phonetics, biomechanics, reduction

"Spirantization" refers to cases in speech in which stop sounds are produced as fricatives. This is notably seen in Spanish, where all of the voiced stops (velar, dental and bilabial [g, d, b]) are sometimes produced as fricatives [x, ð, f]. Two questions have arisen around Spanish spirantization. First, are spirantized variants failed attempts to reach an intended stop target, or do they have their own separate targets? Second, if spirants and stops are distinct targets, then how do speakers determine which variant to use in which context? While Spanish "spirantization" is often cited as a case of phonetic reduction, in which stop closure movements are suggested to be produced in a failed/reduced form (Nemer 1984, Piñeros 2002, Ortega-Llebaria 2004, Kaplan 2010), and/or where speech muscles fail to achieve full activation (Parrell 2011), an embodied theory as described by Gick et al. (2011, 2019) generates the hypothesis that persistent spirantized variants are likely to stabilize into two distinct targets.The present study examines our two questions by examining productions of the dental stop /d/ and its interdental variant [ð] in YouTube videos of naturalistic speech produced by 12 native speakers of Spanish. The area of visible tongue for /d/ in each video frame was measured and normalized. Differences in visible production indicate different active muscle groups for the dental /d/ vs. tongue protrusion in the interdental spirant. All instances were also coded by trained phoneticians for possible conditioning factors such as stress, phonological environment, speech rate and lexical frequency. Results show a bimodal distribution in visible tongue area, consistent with the view that the spirantized and stop variants are produced with intent to achieve a separate target. In examining possible conditioning factors, results indicate that none of the factors previously described in the literature account for the distribution of stop and spirant variants, supporting the view that the two variants occur in free variation. These findings are compatible with an embodied, modular approach to speech motor behavior.

Speaker Session 2

A Unified Structure of Relative Clauses in Tibetan using the Matching Analysis

Bailey Trotter

Keywords: Tibeto-Burman, Relative Clauses, Matching Analysis, Double-Headed Relative Clauses, Internally-Headed Relative Clauses

Background: Tibetan, and other languages in the Tibeto-Burman family form relative clauses using clausal nominalization. Across the language family pre-nominal, post-nominal, internally headed, headless, and double headed relative clauses are all attested, sometimes all within the same language (Genetti 2011). DeLancy (1999) argues that all of these structures are possible in Tibetan.

Overview: I will use data collected from a speaker of the Amdo dialect of Tibetan to argue that there is only one structure of relative clauses in Tibetan using the matching analysis of relative clauses. There is an internal head position and a clause final head position. This analysis will be supported in three sections, #1 post-nominal relative clauses can be analysed as head internal (Delancey 1999), #2 double headed RCs and headless RCs are attested, supporting the argument that there is the availability of two head positions with the option to be deleted in certain contexts, and #3 that relativizing an adjective which describes the head noun results in structures which must be analysed as IHRCs rather than head final RCs.

1. Post-nominal RCs as IHRCs:

The data in (1) can be analyzed as either a post-nominal RC or an IHRCs, where the head *mi*,is either clause internal or proceeds the clause. I propose that this be analyzed as head internal based on data in section 3.

(1) [**mi** nga-s mthong-pa] de
person 1-ERG saw-NOM DEM
'The person who I saw'
(Delancey 1999)

2. Double-headed RCs and Headless RCs:

Both double-headed RCs (2) and Headless RCs (3) are possible, providing evidence for two head locations which both have the ability to be elided.

(2) [nga-r **sgam** cig-gi 'og-nas dngul rnyed-pa] -'i **sgam**
I-LOC box a-GEN under-ABL money found-NOM-GEN box
'the box I found money under'

(3) [jyang gang la yot pa] te
wall on to COP NOM D
'The one that was on the wall'

3. Relativized adjectives as IHRCs:

When an adjective which describes the head noun is relativized the resulting RC will be head internal. In most cases the head final structure is preferred, but in adjectival cases separating the head noun from the adjective which describes it results in ungrammaticality. If this structure was to be analyzed as head initial rather than head internal, there would be no explanation for the deviation from the preferred head final structure.

(3) [**nya** jangku yin khen] te-i dre sa-ki-yo-re
fish green COP NOM D-AGT rice eat-HAB
'The fish that is green eats rice'

The agentive particle in (3), which we would expect to be affixed *nya* is located outside the RC on the determiner which is in the position of the external head, showing the relationship which exists between the head internal and head final positions.

Conclusion: Data from relativized adjectives which describe the head noun help to provide a unified analysis of the various structures of relative clauses that have been argued to exist in Tibetan, by using the matching analysis to argue that all of the relative clauses ultimately have the same underlying structure.

Rapid prosodic transcription: Analyzing Gitksan speaker intuitions about prosody

Rosemary Hu

Keywords: Tsimshianic, prosody, phonetics, perception, methodology

Overview: This paper conducts a pilot study which assesses whether Rapid Prosodic Transcription (RPT) is a reliable method of prosodic analysis of understudied languages that do not have a pre-existing corpus. Based on RPT as applied to Gitksan (Tsimshianic), I argue RPT is suitable because it emphasizes auditory perceptions of the speaker who is transcribing. I also argue that an alternative system designed for transcribing prosody, Tone and Break Indices (ToBI), is not well-suited for prosodic analysis of understudied languages as it requires a large corpus to be most effective. Through this pilot study with three Gitksan language consultants, I find significant overlap of prominence agreement between the speakers, but greater variability with regards to their boundary markings.

Methodology: RPT is a prosodic annotation method where speakers are asked to mark prominences and boundaries on isolated words in a transcription of a speech sample that is played to them (Cole and Shattuck-Hufnagel, 2016). This RPT analysis was carried out with three Gitksan language consultants originally from both the Eastern and Western villages. Each session was conducted separately, and each consultant was given the same instructions of marking their perceived prominences (with highlighter) and boundaries (vertical bar with red marker). As prominence, also known as stress or emphasis in speech, is manifested by four main factors— (1) loudness or intensity, (2) length, (3) pitch (4) quality (Roach, 2019)— I isolated parts where the language consultants shared prominence agreement into Praat (Boersma and Weenink, 2019) to check if the acoustic analysis also showed prominence, in the form of wavelength spectrogram, and pitch contour.

Results: The results showed that speaker agreement for prominences did not necessarily depend on the geographical proximity of their villages. These results provide further supporting evidence that Gitksan speakers may exist more towards a dialect continuum (Borland-Walker, 2019) instead of Eastern versus Western dialects. There was greater variability between all three speakers in regards to boundary markings, but this may be due to factors including my definition of 'boundary' needing to be more specific.

Conclusion: The lack of explicit rules in RPT emphasize the importance of speaker auditory perceptions as a valuable resource that should not be overlooked, especially when it comes to endangered languages with few speakers. Furthermore, RPT can be done by anyone with enough familiarity with the language in order to read the transcriptions, to comprehend and follow along with the audio recordings they are presented. This additionally makes a strong case for the effectiveness of RPT to Gitksan as Gitksan silent speakers—speakers who are unable to produce their language due to experiences such as trauma and erasure of their language in residential schools—could potentially be included in this work. This would expand not only the population size of Gitksan community members able to contribute to the revitalization of their language, but also introduces a different speaker population upon which to gather more language data.

Pitch variation in Umuahia Igbo

Chloe Farr

Keywords: quantifier scope, logic, syntax-semantics, psycholinguistics, sentence processing

Most research conducted thus far on tonal pitch of Igbo vowels has varied in terms of prosodic contour (pitch and rhythm contour) or phonological environment. Impacts on pitch values previously reviewed include downstepping, the lowering of pitch throughout multisyllabic words or phrases (Welmers, 1974; Pulleyblank, 1986; Clark, 1990), vowel backness when following nasal /m/ and /n/ consonants (Nkamigbo & Eme, 2016) and voicing of preceding labial stops for all Igbo vowels (Nkamigbo, 2012). The present study investigates voiced velar /g/ and voiceless velar /k/ but also labialized voiceless velar /kw/ - where labialization is contrastive in meaning with /k/ and /g/ specifically in the Umuahia dialect of Igbo. The impact of these segments on the open central vowel bearing a low tone /à/ is reviewed. Stimuli used in this research are from a recorded word list, thus word tokens of isolated speech, obtained from the UCLA Phonetics Lab Archive (2019) under a Creative Commons license. A benefit of using tokens from isolated speech is that the results aren't impacted by articulatory characteristics of sound segments succeeding the vowel, or tonal downstep, both of which appear in prosodic speech. Isolated speech is also void of impacts of grammatical intonation. This research investigates the variation of the low tone low vowel /à/ pitch values (Hz) caused by voicing of preceding velar stops /k/ or /g/. Praat (Boersma & Weenink, 2019) was used for all data collection. A script was built and run, which printed pitch values at 20ms intervals, along with rough pitch contours. It was found that at the vowel onset, a lower pitch occurs after /g/, while pitch is higher after /k/, relative to each other. Mean pitch of the low tone vowel in /kwà/ syllables is between those in /gà/ and /kà/, indicating an impact of secondary articulation features such as labialization of a voiceless consonant. An implication of the research thus far is that pitch does vary by voicing of preceding consonants, both with and without secondary labialization.

Neonatal imitation and language preference

Clarissa Montgomery, Bahia Guellaï, Henny Yeung

Keywords: neonates, imitation, language preference, mouth opening, tongue position

Newborns imitate facial expressions (Meltzoff & Moore, 1977), but there is an ongoing debate about whether this is socially driven, or a result of a more general physiological response (Meltzoff & Moore, 1977; Jones, 1996). One way of examining this phenomenon is to assess how imitation relates to socially linked stimuli. Prior studies investigating pre- and neonatal abilities show that a fetus is able to hear the rhythm of their mother's language in-utero (Gerhardt & Abrams, 1996), and that newborns can distinguish between languages with different rhythmic patterns (Ramus, 2008). It has also been shown that newborns prefer their mother's native language over others (Moon, Cooper, & Fifer, 1993). Here we evaluate the proposal that newborn imitation is socially driven and ask whether the language(s) spoken by an adult model can affect the likelihood of imitation. Specifically, this study investigates whether monolingual newborns are more likely to imitate a speaker of their mother's native language (French).

Previous work (DeKlerk, Bulgarelli, Hamilton, and Southgate, 2019) showed that 11-month-olds indeed show greater facial mimicry for speakers of their native language. Our study asks if this phenomenon is also true of infants at birth. In order to test this, newborns between 0 and 4 days old were shown a video of an individual telling a story in either French or English, then demonstrating Mouth Opening (MO) or Tongue Protrusion (TP) – both of which are facial expressions typical of imitation studies. Each infant's behaviour was video recorded, and their facial behaviours (along with a number of other behavioural measures) were coded blindly per phase of the video.

As only 15 newborns have provided adequate data thus far (i.e. were awake and attentive for 75% of their session), the data collection for this study is not yet complete. The objective is to conduct an analysis of 40-50 infants, based on prior sample sizes (e.g. Howard, Henderson, Carazza, & Woodward, 2015; DeKlerk et al., 2019; Buttelmann, Zmyj, Daum, & Carpenter, 2013), and data collection is currently ongoing at Hôpital Bichat-Claude-Bernard in Paris, France. Nevertheless, a small analysis of the first 15 subjects has been conducted, where the average of imitative behaviours was compared between the two language groups. Imitative behaviours were defined as when a neonate demonstrated a behaviour at the same time as the stimulus, or within the 25 seconds afterwards. Preliminary data show that infants are indeed imitating the behaviors shown to them. Furthermore, imitation averages were higher in the French condition. Therefore, it does seem as though language preference has an influence on imitation, but a larger sample is required to confirm these results and to make further conclusions.

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