EDULANG *2024*

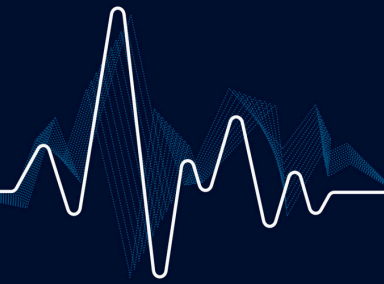## Variation & Diversity in Language Acquisition & Processing

November 14th-16th, University of Connecticut
Konover Auditorium, Dodd Center

Event RSVP

*Registration required.
Deadline to register is
November 1st at 12PM

Thursday, November 14th, 9AM-5PM
Friday, November 15th, 9AM-5PM
Saturday, November 16th, 9AM-1PM
Coffee Service and Lunch Included

Event Speakers

Aaron Shield, PhD
Miami University, OH

Carrie Larson, PhD
University of Missouri

Craig Chambers, PhD
University of Toronto

Marc Joanisse, PhD
Western University

Linda Smith, PhD
Indiana University

Elena Tenenbaum, PhD
Duke University

Larissa Samuelson, PhD
University of East Anglia

Letitia Naigles, PhD
University of Connecticut

Bede Agocha, PhD
University of Connecticut

Juli Cebrian, PhD
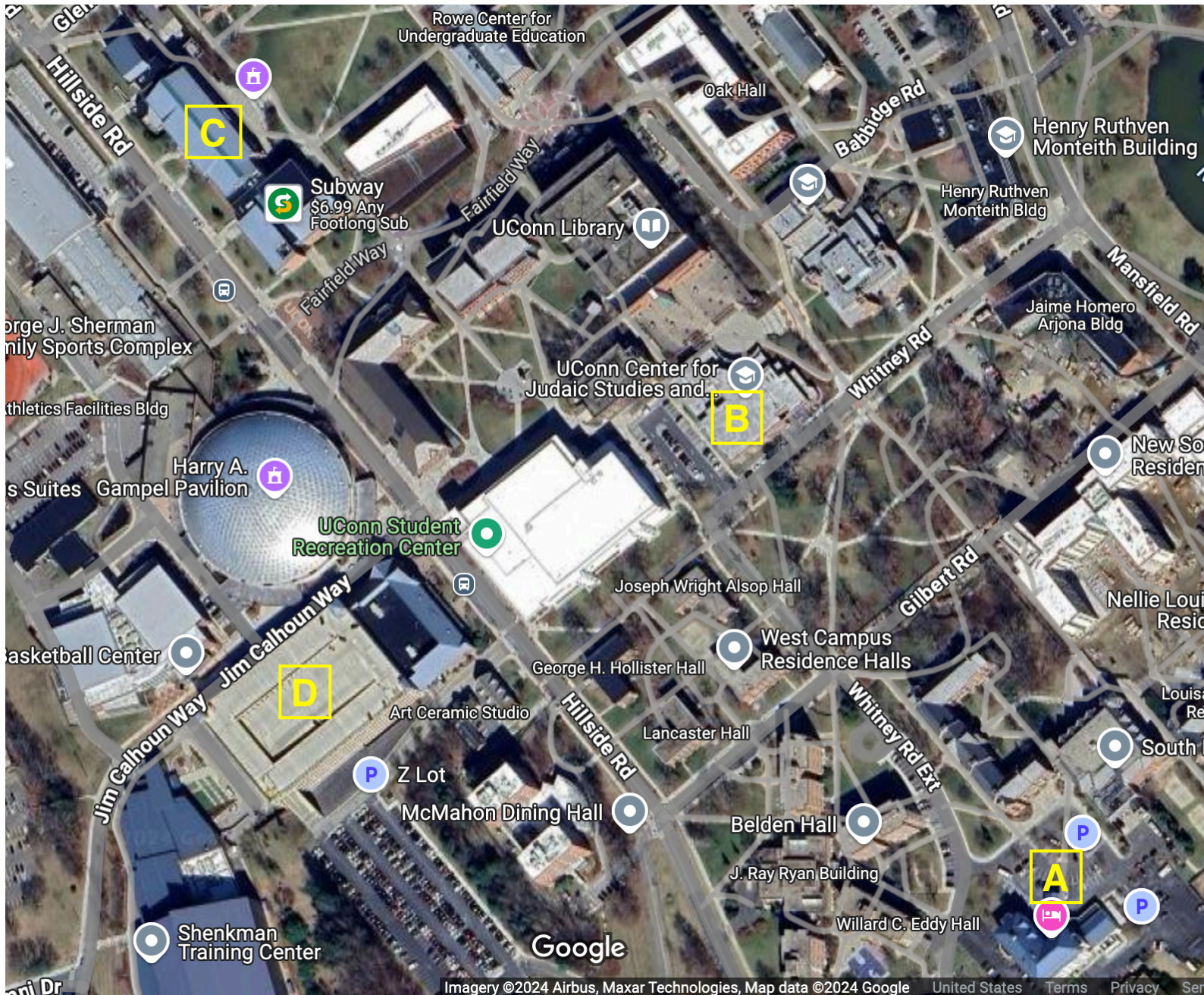Universitat Autònoma de
Barcelona

Ethan Weed, PhD
Aarhus University

Arnaud Rey, PhD
Université Aix-Marseille

NTNU

UCONN
UNIVERSITY OF CONNECTICUT

Event Locations

A) The Graduate Hotel (Guest Lodging & Dinner 11/14)
B) Dodd Center- Konover Auditorium (Main Event)
C) Student Union (Lunch 11/14 & 11/15)
D) South Parking Garage

Thursday, November 14th

8:30-9:00	Coffee Service
9:00-9:10	Welcome and Remarks
9:10-10:05	**New applications of Deaf and sign gain in autism research** Aaron Shield *Miami University of Ohio*
10:05-10:15	BREAK
10:15-11:10	**Associations between mental rotation and language in autism** Caroline Larson *University of Missouri*
11:20-11:30	BREAK
11:30-12:25	**Speech acts, perspective reasoning, and core linguistic computations** Craig Chambers *University of Toronto*
12:30-14:00	LUNCH in **Student Union Room 104**
14:00-14:55	**Brain networks supporting speech and reading in children** Marc Joanisse *Western University*
14:55-15:05	BREAK
15:05-16:00	**It's all connected: Statistics at multiple times scales and the early learning of object names** Linda Smith *Indiana University*
16:00-16:10	BREAK
16:10-17:05	**Scaling up and aging down – using computer vision to study early markers of variation in language acquisition** Elena Tenenbaum *Duke University*
17:05-18:00	BREAK
18:00	DINNER at **The Graduate Hotel- Ballard A**

Friday, November 15th

Time	Event
8:30-9:00	Coffee Service
9:00-9:10	Welcome and Remarks
9:10-10:05	**Toward a Precision Science of Word Learning: Understanding Individual Vocabulary Pathways** Larissa Samuelson *University of East Anglia*
10:05-10:15	BREAK
10:15-11:25	**Teaching about Language and Racism to Undergraduates** Letitia Naigles & Bede Agocha *University of Connecticut*
11:25-12:15	**Brainstorming: Integrating diverse perspectives in psycholinguistics research**
12:15-13:45	LUNCH in **Student Union Room 104**
13:45-14:40	**The role of cross-linguistic perception in L2/FL learning: Linguistic and metalinguistic factors** Juli Cebrian *Universitat Autònoma de Barcelona*
14:40-14:50	BREAK
14:50-15:45	**Time to Give Up on Vocal Markers of Autism?** Ethan Weed *Aarhus University, Denmark*
15:45-15:55	BREAK
15:55-16:50	**The new wave of computational models of language processing** Arnaud Rey *Université Aix-Marseille*
16:50-17:20	Discussion

Saturday, November 16th

9:00-9:30	Coffee Service
9:30-11:00	Data Blitz
11:00-1:30	Group Discussion and Lunch

Abstracts

Aaron Shield, Miami University of Ohio - *New applications of Deaf and sign gain in autism research*

Deaf gain, the rhetorical inversion of hearing loss (Bauman & Murray, 2014), focuses on the benefits and advantages conferred by deafness. A related concept, sign gain, refers to the benefits of learning a signed language. In this talk I will explore two applications of these concepts to the field of autism and language through discussion of two new studies in progress.

The first study focuses on interactions between young autistic children and their caregivers. It is well established that episodes of joint attention between children and caregivers are an important cornerstone of language acquisition, yet autistic children often struggle with the establishment and maintenance of joint attention, with cascading effects on both linguistic and social development. Through coding of play-based interactions between parents and their young autistic children, we ask (a) if Deaf parents of autistic children, who are uniquely attuned to the visual modality, differ from hearing parents of autistic children in the strategies that they deploy to establish and maintain episodes of joint attention; and (b) if such differences lead to more successful interactions, with more frequent and longer episodes of joint attention.

The second study focuses instead on the question of whether exposure to a signed language has the potential to mitigate some of the cognitive challenges associated with autism, specifically theory of mind and emotion recognition. Prior research has shown that exposure to two languages on the one hand and exposure to a signed language on the other both confer cognitive benefits on learners. Bilingual-exposed children show advantages in theory of mind development over monolingual speakers, whereas sign-exposed children show advantages in face-processing abilities, including emotion recognition and face discrimination. In a new study designed to compare monolingual (English-speaking) hearing autistic children and bimodal bilingual (ASL-English) hearing autistic children (of Deaf parents), we seek to understand if exposure to ASL in addition to English could confer benefits on autistic children in the areas of theory of mind and emotion recognition. Both studies apply the concepts of Deaf/sign gain in the realm of autism and language, with potential implications for the larger autism, Deaf, and scientific communities.

Caroline Larson, University of Missouri - *Associations between mental rotation and language in autism*

Though spatial cognition is often viewed as a relative strength in autism spectrum disorder (ASD), there are specific patterns of weakness on tasks that tap these skills, such as spatial navigation, mental rotation, and spatial language tasks. Evidence suggests an important role for interrelationships between language and spatial cognition across neurotypical development, yet language and spatial cognition systems appear to be dissociated in ASD. This dissociation may reflect weakened abstract representation in autism that has cascading effects on language and cognition. Using a classic spatial cognition paradigm, this series of studies compared performance on mental rotation tasks with varied levels of abstractness in ASD versus age-matched neurotypical peers. We also tested how performance on mental rotation tasks was associated with heterogeneity in structural language skills (i.e., morphosyntax). Results suggest poorer accuracy and slower reaction time regardless of abstractness for the ASD relative to neurotypical group, and selective dissociations between language and in-the-moment efficiency for the ASD group. Follow-up analysis of in-the-moment cognitive effort via pupillometry is forthcoming and will further characterize interrelationships between language and spatial processing and the role of abstraction. Findings from this work will contribute to a better understanding of how heterogeneity in language and cognition covary in autism, which is critical to characterizing the autistic phenotype and identifying appropriate interventions and supports.

Abstracts

Craig Chambers, University of Toronto - *Speech acts, perspective reasoning, and core linguistic computations*

We often think of human language as a powerful symbolic system whose rich collection of rules and categories yields exceptional communicative power. However, on closer inspection, the utterances we encounter are typically riddled with ambiguities at various levels of representation. Viewed this way, it's clear that the utility and efficiency of language also hinges on the ability to use nonlinguistic information to "go beyond" what is said to arrive at an understanding of what is meant. One specific example is the case of perspective-taking, namely the ability to accurately infer the mental states of others.

In this talk, I will discuss two lines of work exploring how perspective-taking is linked to the notion of speech acts (e.g., Searle, 1969, namely the pragmatic function of an utterance, such as asserting something vs. asking a question vs. issuing a command). In all cases, the empirical testbed involves identifying the intended referent for a referring expression. The first line of work focuses on the interpretation of pronouns (they, it she), which are often linguistically ambiguous. Building on insights from Smyth (1995), the studies highlight how different speech-act contexts strongly determine how perspective information guides pronoun comprehension. Example:

Jane told Zelda that she likes spaghetti.
(Assertion. Jane holds key knowledge at issue. she = Jane)
Jane asked Zelda if she likes spaghetti.
(Question. Jane lacks key knowledge at issue. she = Zelda)

At first glance, the findings from this first line of work suggest that securely recognizing the speech act for a given utterance is an essential ingredient that enables perspective reasoning to guide referential interpretation. If so, would the absence of this information hinder efficient/effective processing? A second line of research explores this question by focusing on the incremental processing of spoken sentences, capitalizing on an intriguing feature of East Asian languages. Specifically, in a language like Mandarin Chinese, some utterances can be entirely ambiguous between being a question or a statement until sentence-final words are encountered. This could plausibly thwart comprehenders' ability to efficiently identify candidate referents via perspective reasoning. However, the results show that comprehenders spontaneously draw on the broader behavioural goals of the context to accurately infer the speech act for an unfolding utterance, in turn enabling them to accurately identify referents before sentence-final information is encountered. Together the results highlight the richness and flexibility of the reasoning processes that guide core linguistic computations.

Searle, J. (1969). Speech Acts. Cambridge University Press.
Smyth, R. (1995). Conceptual perspective-taking and children's interpretation of pronouns in reported speech. Journal of Child Language, 22, 171-187.

Marc Joanisse, Western University - *Brain networks supporting speech and reading in children*

Much of what we know about the brain bases of written and spoken language comes from studies that seek to localize its function(s) in specific cortical and subcortical regions. But of course, the brain is not just an assembly of these individual processing regions. Instead, it's an interconnected matrix of regions that interact in ways that dynamically shape how children learn and process language. In this talk. I present some recent work from my team and collaborators where we study how brain connectivity shapes individual differences in children's speech and reading. This work focuses on how networks of brain regions specifically support phonological and decoding processes that are at the crux of reading acquisition and dyslexia. I present work examining functional connectivity with fMRI, white matter connectivity with DTI, and a newer control theory technique that merges the two modalities. I suggest that this kind of brain connectivity work can reveal useful new insights into language and reading development, and which go beyond what we have already learned using traditional localization approaches.

Linda Smith, Indiana University - *It's all connected: Statistics at multiple times scales and the early learning of object names*

The real-life experiences that provide the data for learning language are not at all like we assume in our experiments, models, observations and interventions directed to the early stages of vocabulary development. Learning in any domain depends on both the learning machinery (the internal mechanisms) and the training data (the experiences). The learning machinery has to match the training data for fast and efficient learning. Here I will present findings on the daily life statistics of words and referents in infants from 6 to 24 months at multiple timescales: over years, months, episodes of experience, and at the level of fractions of a second. The statistics of daily life experience point to a long and multi-causal path to early word learning that starts early. There are multiple inflection points with roles of vision, sensory-motor development, parent scaffolding. They also motivate new hypotheses about the learning mechanism itself.

Abstracts

Elena Tenenbaum, Duke University - *Scaling up and aging down – using computer vision to study early markers of variation in language acquisition*

Roughly 30% of autistic individuals remain minimally or low verbal as adults, often despite significant intervention. The challenge of developing effective interventions targeting language acquisition in this population is related to our limited understanding of the mechanisms underlying language development in autistic children. This gap in our knowledge is attributable to the developmental lag between the onset of language development in infancy and the diagnosis of autism in late toddlerhood. To draw meaningful conclusions about a population as heterogeneous as autistic children, large samples are required. To date, the need for in-person assessments has made it challenging to collect the requisite sample to understand how language develops in infants with diverse trajectories. Here I will present work from the Remote Infant Studies of Early Learning (RISE) Battery and Consortium that leverages advances in the remote administration of looking time tasks for infants and automated coding of infant looking behaviors to study early cognitive and language development. Our group recently established the feasibility of remote assessment using this scalable battery of tasks and computer vision software to reliably identify gaze direction in response to tasks assessing language and cognitive development. I will present the results from our pilot studies and discuss our planned project to test three of the posited mechanisms of language impairment in autism: (1) Atypical Speech Perception; (2) Audiovisual Synchrony Processing, and (3) Prediction. Our hope is that this work will allow us to identify robust tasks for assessing these skills remotely in a large sample of infants with elevated likelihood for autism. This has the potential to inform our understanding of the mechanisms underlying atypical trajectories in language development in autism.

Larissa Samuelson, University of East Anglia - *Toward a Precision Science of Word Learning: Understanding Individual Vocabulary Pathways*

Toddlers vary widely in the rate at which they develop vocabulary. This variation predicts later language development and school success at the group level; however, we cannot determine which children with slower vocabulary development in the second year will continue to have difficulty. In this talk I will argue that making progress on this question requires greater understanding of how the multiple cognitive processes that support early word learning interact. This requires both measuring the multiple processes supporting early word learning in individual children, and a good theory of how these processes operate as a system to create individual children's pathways to word learning. I will show some of the progress my colleagues and I have made on these fronts. I'll introduce our formal dynamic process model of early word learning and show you how it both captures extant data and provides insight on how differences in processing relate to differences in word learning. I'll also present recent work from studies that seek to capture concurrent changes in the processes that support vocabulary development during toddlerhood as well as how these changes relate to vocabulary. I will conclude with our first steps towards mapping models of individual differences to individual children's data. The long-term goal of this work is to understand how individual children's strengths and weaknesses create unique vocabulary pathways that enable us to predict outcomes and identify effective interventions.

Letitia Naigles & Bede Agocha, University of Connecticut - *Teaching about Language and Racism to Undergraduates*

We describe a course we have innovated, which examines the relationships among language use across the lifespan and the social construction of race, racism, and racial identity, with particular emphasis on racial politics in the United States. The course is concerned with the ways in which language serves as a basis for inter-ethnic conflict, discrimination, and imbalances in legal, educational, residential, and social opportunities. One major focus involves the variations of English used by members of African American/Black communities in the United States; we examine the linguistics and sociolinguistics of these variations. We also examine the developmental psycholinguistics of learning that words are invitations to form categories. A second major focus examines how racism is produced and reproduced in discourse, especially in the context of the denial of racism. The course explores issues relating to ideologies of language and their interaction with group identity at both the local and national community levels, as well as the potential for language to serve as a tool for beneficial interaction and maintaining intergroup dialogue and cooperation.

Abstracts

Juli Cebrian, Universitat Autònoma de Bar - *The role of cross-linguistic perception in L2/FL learning: Linguistic and metalinguistic factors*

The notion of cross-linguistic perceived similarity, that is, the degree of similarity between sounds from different languages, is a crucial concept for many disciplines in the speech sciences, from language variation to phonological acquisition. In the domain of second language acquisition, it is well known that the mother tongue or first language (L1) influences the process of acquiring the phonological system of a second or foreign language (L2). Most models of L2 speech learning propose that target language sounds are initially perceived in terms of native language categories (i.e., they are equated or assimilated to L1 categories, e.g., Best and Tyler, 2007). According to current L2 speech models, the degree to which target L2 sounds assimilate to native categories may determine the extent to which L2 learners succeed in creating target-like categories for L2 sounds (i.e., for sounds that differ from L1 categories), allowing them to ultimately perceive and produce L2 sounds accurately (Flege and Bohn, 2021). Despite the relevance of this notion for L2 speech research and other disciplines, there is still substantial debate about how to measure cross-linguistic similarity reliably and efficiently.

Given this background, this talk will directly address the issue of cross-linguistic similarity, highlighting its methodological and theoretical importance for current theories of L2 acquisition, reviewing current approaches to assessing cross-linguistic similarity, discussing methodological limitations and innovations, and examining the effect of L2 experience and individual differences in cross-linguistic similarity and their consequences. Core findings will be drawn from a series of empirical studies examining the perceived similarity between (mostly) English and Catalan or Spanish vowels and the relationship between cross-linguistic perception and L2 performance. The results of these studies suggest that, although cross-linguistic similarity is clearly a determinant of L2 speech learning, the degree of L1-L2 similarity alone does not fully explain L2 performance. Other factors interfere with effects of perceived similarity, including individual variation at the listener level and the amount of L2 learning experience, the influence of pronunciation instruction, the influence of spelling and metalinguistic knowledge, and the difference between phonetic and phonological similarity (Chang, 2019).

Ethan Weed, Aarhus University - *Time to Give Up on Vocal Markers of Autism?*

Prosody is a key element of language development, and for decades researchers have been trying to identify the acoustic markers that are characteristic of the prosody of children, teens, and adults with autism. Despite a seeming consensus that atypical prosody is common in autism, there is still no clear picture of what the underlying acoustic pattern might be. But what have we learned? Is it time to give up? And if not, how should we proceed?

Arnaud Rey, CNRS & Aix-Marseille University, France - *The new wave of computational models of language processing*

Computational modeling of language processing has been one of the most theoretically fertile areas of cognitive psychology. But this fertility has somehow declined in recent years, particularly in the study of written word processing. I propose two ingredients to revitalize this theoretical fertility. The first is to agree on a list of phenomena on which future computational models should be tested. Testing model predictions on item-level performance should be one of these benchmark phenomena. The second ingredient should be to include in these models advances in implicit statistical learning, which is currently one of the most theoretically fertile areas. This field provides notably insights to the question of the nature and development of chunks and language processing units. Finally, while the prodigious development of large language models cannot be ignored, it seems that a computational approach based more on general operating principles should be more fertile for describing and understanding language processing mechanisms.