SDSU / UCSD Joint Doctoral Program in Language & Communicative Disorders

16TH Annual
Doctoral Student Colloquium

Friday, September 28, 2012
9:00 am, UCSD, CSB 180

Stephanie DeAnda
Language Exposure, Maternal Education and Vocabulary Comprehension in Young Children

Samantha Engel
English Past Tense Marking in Bilingual Preschool Children

Michelle Ferrill
Structure-function Correspondences in Broca’s Aphasia: Evidence from MRI and Lexical Activation in Canonical Sentence Constructions

Kristi Hendrickson
Measuring Infant Lexical Knowledge: An Intermodal Approach

Shannon MacKenzie
Online Processing of Wh-Dependencies

Kristen Secora
The Action-Sentence Compatibility Effect in ASL: The Role of Semantics vs. Perception

Refreshments will be served

Host: UCSD Center for Research in Language

For information or directions, please email:
Jill (jbaumgar@mail.sdsu.edu) or Margaret (mpaulson@crl.ucsd.edu)
The influence of poverty on language acquisition in children is of interest from both a theoretical and a public health perspective. In a classic study, Hart and Risley (1995) used language samples to model the language environment of children from varying socio-economic status (SES) homes. The results suggest that lower SES children are exposed to a smaller set of words in comparison to higher SES children. Longitudinal follow-ups revealed that development in children was related to children’s language exposure. More recent work has supported a relationship between maternal education (a proxy for SES) and parent reports of early language (Hoff and Tian, 2004). In a very related endeavor, researchers have sought to explain how relative language exposure affects vocabulary acquisition. This question has been studied using parent report of vocabulary production on the MCDI and language exposure. The recent focus on bilingual language development has especially suggested a significant relationship between these two measures, such that the rate of vocabulary acquisition in a language varies as a function of relative exposure (Pearson, Fernandez, Lewedeg, and Oller, 1997; Eillers, Pearson, & Cobo-Lewis, 2006; Hoff 2012). The present study attempts to extend findings on the influence of SES and language exposure on language acquisition by focusing on data on child vocabulary comprehension rather than production. Furthermore, it attempts to explore these relationships using the Computerized Comprehension Task (CCT), a direct measure of child language comprehension, rather than solely through parent-report (Friend et al., 2008). Preliminary results reveal that relative language exposure does not explain significant variance in language comprehension as assessed by either the CCT or the MCDI when controlling for maternal education. Maternal education, however, continues to explain modest variance in both measures, above and beyond relative language exposure ($R^2 = .12$ with MCDI and .10 with the CCT). These findings suggest that SES and relative language exposure covary so that SES may explain the lower vocabulary scores observed as a function of exposure.

**English Past Tense Marking in Bilingual Preschool Children**

**Samantha Engel**

Advisor: Sonja Pruitt, Ph.D.

Research to date documents similarities and differences in the English past tense marking profiles of children from varying language backgrounds (Paradis, 2005; Paradis & Crago, 2000; Paradis, Rice, Crago, Marquis, 2008; Blom & Paradis, 2012; Oetting & Horohov, 1997; Pruitt & Oetting, 2009; Marchman, Wulfeck, Ellis Weismer, 1999, Jacobson & Schwartz, 2005). Children’s use of the past tense is sensitive to a variety of factors at the word (e.g., frequency), phonological (e.g., stem final phonology), and task (e.g., probe vs. spontaneous sample) levels. The purpose of the present study is to examine the effect of these factors on preschool bilingual children’s marking of English past tense. Data were from 13 Spanish-English bilingual preschoolers. Tasks included a video probe, one subtest from the Test of Early Grammatical Impairment (TEGI; Rice & Wexler, 2001), and spontaneous language samples. Results indicated that the children’s rates of overt marking of past tense differed for frequency and phonology but varied according to task. Results are discussed in terms of practical and theoretical utility. Limitations and future directions are then reviewed.
I report on a portion of a multi-experiment study investigating the time-course of lexical processing during the auditory presentation of simple, canonical (S-V-O) constructions by left-hemisphere damaged (LHD) individuals with agrammatic Broca’s aphasia. In previous work (Ferrill, Walenski, Love and Shapiro, 2012), I found that unimpaired control participants demonstrated immediate activation of a noun’s meaning (through priming) at the point where the noun was encountered in a simple sentence, followed by a rapid loss of activation (decay of priming), and some evidence of an “echo” of activation at a later, downstream point. While the LHD group showed a similar pattern of activation for the noun’s meaning, the time course of that pattern was temporally delayed by 400msec compared to control participants. This pattern (and similar ones demonstrated in the literature) is consistent with claims that impaired lexical routines could underlie documented syntactic processing deficits observed with this LHD group, i.e., an inability to link structural dependencies at the temporal point at which they are licensed in complex sentence constructions. The purpose of the current study is to investigate the relation between structure (lesion anatomy) and behavior (lexical activation) in predicting individual variation. We obtained structural magnetic resonance images for 6 LHD patients with agrammatic aphasia and computed the proportion of lesioned tissue in anatomically distinct regions of interest in the left hemisphere (e.g., BA 45 and TE3). Structure-function analyses revealed that lesions in both temporal and frontal areas contributed to the online priming effects, though each region seems to have played a distinct role. These findings will be discussed in terms of the current accounts of the temporal aspects of auditory processing of lexical items in sentences.

Measuring Infant Lexical Knowledge: An Intermodal Approach

Kristi Hendrickson
Advisor: Margaret Friend, Ph.D.

Over the past several decades there has been a lively debate in the infant development literature regarding which response modality best measures infant lexical knowledge. Recently two methodologies using different modalities (visual and haptic) have been offered for testing the development of decontextualized word comprehension: the looking-while-listening procedure (Fernald et al., 2008) and the Computerized Comprehension Task (Friend et al., 2008). Each method has demonstrated long-term predictive validity, nonetheless researchers cannot use both infant eye-gaze and touching responses as analogous measures of lexical knowledge until the direct relationship between these measures has been established. Furthermore few studies have investigated the involvement of infants’ gaze patterns in the planning and execution of their actions. Thus the present study examines the concurrent relationship between visual and haptic response as measures of infant word comprehension. We created an intermodal procedure where infants viewed pairs of images on a touchscreen monitor and were prompted by an experimenter to touch one of the images. Videos of eye-gaze, reaching, and a waveform of the experimenter’s vocalizations were synced using EUDICO Linguistic Annotator (ELAN) and coded frame-by-frame. To measure convergent validity of each response modality with parent report, parents filled out the MacArthur-Bates CDI Words and Gestures (MCDI: WG). The haptic measure corresponded well with parent estimates on the MCDI: WG in contrast to the looking-time measure. On a majority of trials (74%) eye-gaze and reach were in the same direction. However, when infants failed to touch either image the proportion of looking time to the target was significantly more than chance. Additionally infants’ attentional style was related to their haptic performance. Specifically infants who made more saccades between the object pairs touched the target more often and more accurately than did infants who had longer fixation durations and less saccades. Together, these data suggest haptic and visual modalities, and parent report may be differentially sensitive to latent versus active lexical representations. Moreover these findings highlight the utility of using multiple, coinciding methodologies to provide a comprehensive picture of the link between motor-perceptual processes taking place in development.
Online Processing of Wh-Dependencies
Shannon MacKenzie
Advisor: Lewis Shapiro, Ph.D.

This study is the initial phase of a two-phase study investigating the online processing of Wh-questions in neurologically unimpaired adults and adults with Broca’s aphasia. Here I report on data from neurologically unimpaired adults. Wh-questions are interesting structures to investigate because they contain so-called long-distance dependencies. For example, the sentence “Which protestor did the sheriff push during the convention last night?” contains an NP argument (“which protestor”) that has been displaced from its typical direct object position occurring after the verb (signified by ____ above), to an earlier position in the sentence. To understand such ‘object-extracted’ wh-questions, listeners must connect the two non-adjacent positions, that is, the gap after the verb and the displaced NP. There are two general types of wh-questions: Who/what (e.g., Who did the Sherriff push…”) and which-NP (above), and within those, there are subject-extracted (e.g., “Which Sheriff pushed the protestor…”) and object-extracted (see above). Evidence from the linguistic and psycholinguistic literatures suggests that Which-NP structures are more difficult to understand than Who/What-questions, and within those, that object-extracted are more difficult than subject extracted. Furthermore, people with Broca’s aphasia have particular difficulty with object-extracted which-NP constructions relative to the others. In the current study I presented Wh-questions to normal adult listeners while they were looking at a ‘three-figure’ picture (e.g., two protestors and a sheriff). Eye movements to the referents in the picture were recorded, thus allowing an examination of online processing. Reaction times to resolving the question were also recorded. Initial results revealed that there were significantly more looks to the object in object-extracted questions (and more looks to the subject in subject-extracted sentences), and, importantly, that RTs to the object-extracted Which-NP questions were significantly longer than RTs to Who-question counterparts. I discuss these preliminary data in terms of different accounts of Wh-question comprehension, and I set the stage for the second phase of this study where I will examine how individuals with aphasia process such constructions.

The Action-Sentence Compatibility Effect in ASL: The Role of Semantics vs. Perception
Kristen Secora
Advisor: Karen Emmorey, Ph.D.

Evidence from the embodied cognition literature suggests that humans use the sensorimotor system in processing language (Gallese & Lakoff, 2005) and that the mechanism by which this occurs is mental simulation (e.g., Zwaan and Taylor, 2005). Effects of this simulation on motor execution have been demonstrated in stimulus-response compatibility effects such as the Action-sentence Compatibility Effect (ACE) (Glenberg & Kaschak, 2002). Response times (e.g, for sentence plausibility judgments) are facilitated when the motor response (e.g., pressing a ‘yes’ button that requires a movement away from the body) is congruent with the movement direction implied by a written or spoken sentence (e.g., “You are handing Courtney a notebook”). Such facilitation provides evidence for the involvement of sensorimotor systems in language comprehension. In sign languages, however, there is a potential conflict between sensorimotor systems and linguistic semantics because movement away from the signer’s body is perceived as motion toward the addressee’s body (who is facing the signer). For example, semantics of the verb PUSH involve movement away from the body, but the addressee perceives the movement of the verb PUSH as toward, rather than away from their own body. We examined whether perceptual processing of sign movement modulates the ACE or whether the ACE is driven purely by the semantics of the verb. If the latter, then the direction of visual movement seen in the sign should have little effect on the motor response. If the former, then conflicting perceptual and semantic motion should affect the ACE. Deaf ASL signers performed a semantic judgment task while viewing signed sentences that expressed motion away (e.g., “you threw a ball”) or toward (e.g., “you grabbed a cup”), responding with button presses requiring movement away from or toward the body. We found that there was a significant congruency effect when participants responded to sentences by pressing a button away from their bodies, but only when responses were categorized in relation to the semantic motion rather than the perceptual motion of the sentence. This result indicates that a) the motor system is involved in the comprehension of a visual-manual language and b) motor simulations for sign language are modulated by verb semantics rather than by the perceived visual motion of the hands.