SPRING 2014

Professor Sarah Creel's

Language Acquisition & Sound Recognition Lab

Back row: Annie O'Brien, Petra Rupert, Mika Oen, Kit Albrecht, Conor Frye, Dr. Sarah Creel, Nicolle Paullada
Front row: Emilie Seubert, Rebecca Roseman, Rachel Kim, Jessica Chen, Melody Chen

Spring Newsletter

Who We Are

We are the Language Acquisition and Sound Recognition Lab, or LASR. Our home base is UC San Diego, where Professor Sarah Creel, Principal Investigator to this research, is a faculty member of the Cognitive Science Department. Along with our lab manager, Emilie Seubert, graduate student Conor Frye, post-Masters researcher Nicolle Paullada, as well as an excellent crew of undergraduates from UCSD, we are investigating several aspects of children's development of language and recognition of various sounds. We recruit preschool-aged children from the local San Diego community to participate in our short and fun computer tasks. We appreciate the great help from our preschool directors and are always grateful for the teachers' hospitality. All of the tasks, or games, that we play with children are fun and short (about 15 minutes), and award a little prize as a thank you for participating. We'd like to give a warm thank you to all the directors, teachers, parents, and children for helping us with our research, and hope to keep making great discoveries in this field!

Preschoolers Say the Darndest Things

- Where do we live?
  "In Mickey Mouse's Clubhouse!"

- "Did you know that when I was a baby, I was in my mom's tummy?"

- What part of California are we from?
  "United States of America!"

- While listening to melodies during the computer game:
  " I think the sounds are going into my brain!"

- While picking out a prize from our prize box:
  "I think I'll pick the eraser. I need a super good eraser because sometimes I mess up."

UC San Diego

Summaries of Recent Publications

How does auditory processing change over development?

What auditory information is most important to the auditory experience of kids? Is it the type of instrument used? The "ups" and "downs" of a melody? More generally, how does the auditory processing change over development? We know that speech sound processing changes throughout development, but less is known about other aspects of auditory processing such as pitch height, timbre, and contour cues in music perception. Processing certain pitch relations is important when distinguishing melodies from one another. For example, Happy Birthday is still Happy Birthday whether it is sung by a soprano or a bass (*pitch height*) or played on a kazoo or xylophone (*timbre*). *Contour cues* are "ups" and "downs" of pitch direction in a melody. The current study addresses the question of how children (versus adults) weigh these auditory cues when representing melodies and strives to understand why a reweighing of cues occurs during development.

In the first experiments, children were told that they were going to meet two creatures and that each creature had a favorite song. After hearing each creature's favorite song multiple times, a melody would play and they were asked to pick which creature's favorite song they were hearing. The melodies either differed in timbre or in pitch height. Children showed very little evidence of using contour cues throughout the experiments and consistently made decisions based on melodies' timbre and pitch height. Adults played the same computer game and we found that they used contours much more than the preschoolers did. Could the preschoolers not perceive the changes in contour? To determine this, we had the children play a short-term memory task in which two melodies were played back-to-back and then asked the children whether the two "songs" they had heard were the same or different. This experiment's trials differed in pitch height, timbre, and contours. Children reliably perceived all three of these dimensions, including contour. Thus, it is possible that pitch contour is particularly difficult for children to encode into long-term memory.

Creel, S. C. (2014). Tipping the scales: Auditory cue weighting changes over development. In press at *Journal of Experimental Psychology: Human Perception and Performance*.

Do children encode information about talkers while simultaneously learning new words?

As children learn language, they gradually develop the ability to process multiple pieces of information about what is being said such as grammar and syntax. When hearing a spoken word, *talker information*, such as age, gender, and identity is communicated in addition to the word itself. Do children use talker identity to help them learn words? In this study, we wanted to know if children use this information when learning new words that sound very similar (geeb, geege) and if they are able to correct their assumptions when more information becomes available to them. We used eye-tracking equipment to see when children learned these new words and what information they were connecting to each of the new words.

In each experiment, preschoolers played a computer game involving two characters, Anna and Conor. Each character had a favorite object, and both words sounded similar (geeb, geege). They were then asked by the talkers for their favorite object ("I want to see the geege") or for the object of the other talker ("Conor wants to see the geege"). Children recognized words more quickly if the two similar sounding words were spoken by talkers with different identities (male and female). We also found that children will look to the talker's favorite object when hearing the talker's voice and before knowing what they should be looking for. So if Anna said, "Find the geege for Conor" children would first look to Anna's favorite object (the geeb). But once they heard Conor's name, they would look toward the geege. These experiments show that children learn not only word meanings, but also voice and talker identity when learning new words.

Creel, S. C. (2014). Preschoolers' flexible use of talker information during word learning. In press at *Journal of Memory and Language*.