

S U M M E R 2 0 1 5

Professor Sarah Creel's

Language Acquisition & Sound Recognition Lab



Preschoolers Say the Darndest Things!

- "I think the sounds are going into my brain!"
- What is your favorite part about preschool? "Sleeping."
- While looking at a picture of an ear "That's my daddy!"
- Where's the bathroom for boys? **points to pool**
- When is your birthday? "I don't know, my mommy hasn't told me yet."
- "My headphones are falling off because my hair is too crazy!"

Thank you to our collaborators this summer!

Tabernacle Christian Academy, Silverman Preschool, Nosh's Ark Preschool, Our Lady of the Secret Heart School, Dayspring Christian Learning Center, Murphy Canyon Preschool, San Raphael Spanish Academy, St. Paul's Lutheran Preschool, English Way Preschool, St. Mary Star of the Sea, Montessori Hills Academy, Gluck Child Care Center, La Petite Ecole, Little Lamb Land Christian Preschool, Merry Go Round Preschool, Discovery Isle Oceanside, Grace Kids Preschool, Honey Bear Preschool and Child Care Center, Calvin Christian School, The Vine Learning Center

Back row: Conor Frye, Sarah Creel, Nick Bokaie, Kaila Uniacke, Carson Miller, Tina Dibs; **Front row:** Emilie Seubert, Jocelyn Ma, Priya Saran, Alphonse Owirka, Nicoe Paullada; **Thumbs up:** Jasmine Wang

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 graduate students Conor Frye and Carson Miller-Rigoli, post-Masters researcher Nicolle Paullada, and 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!

Learn more about us by visiting our website!
<https://quote.ucsd.edu/lasr/>

A Look Back at Some of Dr. Creel's Publications

How do Kids Understand Unfamiliar Accents?

How do children recognize familiar words when those words are spoken in an unfamiliar way? This might occur due to a mispronunciation, or due to an unfamiliar accent. Many children grow up in an environment with multiple languages and/or different accents. For example, a Southwestern-accented speaker may produce the word "pen" as something that sounds a lot like "pin." This creates a unique challenge for children as they learn to attach meaning to words. For this study, we were interested in how and whether preschoolers would recognize alternative pronunciations of words. We tested this by creating deliberate *mispronunciations* of familiar words, and measuring how accurately and how rapidly children recognized them.

In each experiment, preschoolers sat in front of a computer and listened to sounds. On each item of the experiments, they were presented with 4 pictures and a phrase asking them to identify one of the pictures ("Point to the fesh!"). At the same time, their eye movements and responses were tracked using a remote eye-tracking camera. When children saw 4 familiar pictures and heard a phrase with a mispronounced word (like "fesh"), they almost always identified the mispronounced word as the picture with the most similar-sounding name (the fish). However, the eye movement data showed that the children were slower to look at that picture paired with the unusual pronunciation. We also looked at how strong the mispronunciation was, using acoustic and linguistic measures of word similarity. For instance, "fesh" is closer to fish than "fosh" is to fish. Even for these stronger mispronunciations, preschoolers still identified the intended picture more than 50% of the time. Again, eye movement data showed that the stronger the mispronunciation, the longer it took the preschoolers to settle on a particular picture.

Creel, S.C. (2012). Phonological similarity and mutual exclusivity: On-line recognition of atypical pronunciations in 3-5-year-olds. *Development Science*, 15, 697-713.

How Well do Children Recognize Talkers?

How do we develop the ability to understand speech regardless of who is talking, yet still recognize different voices? A 7-month-old infant may recognize the word "dog" when Mom says "dog" but does not recognize the word when spoken by a stranger's voice. Adults, however, are able to distinguish and understand speech with *sound variability* (for example, differences between the word "peach" and "beach") as well as *talker variability* (differences between Mom saying "beach" and Aunt Gertrude saying "beach.") We strove to find out whether children are as skilled as adults at recognizing talkers when each talker's speech pattern or voice had a different trait. For example, could the children recognize the difference between two female college-aged California native talkers?

In our study, preschool-aged child participants played a computer game in which voices were linked to two distinct cartoon characters. Each talker-pair either consisted of the choice of two female college-aged Californians, one mother and her daughter, or one boy and one girl. The children were then asked by each talker, "Where am I? Point at me!" The child would then point to the picture of the talker on the screen to identify it. This way, we could measure the child's accuracy in recognizing talkers.

We had adults play the same computer game and we found that children were far less accurate than adults at distinguishing between the two female college-aged California native talkers, even when each talker's voice had a different stress pattern and intonation. This result implies that children gradually develop the ability to recognize different talkers, becoming more and more skilled as they reach adulthood. However, children were highly accurate when the speakers' voices varied in age or gender, implying that the large acoustic differences between talkers of different ages and different genders facilitated the act of distinguishing between the two talkers. The results of the experiments performed suggest that preschool aged children are still learning the complexities of language that allow adults to accurately distinguish between different talkers. **Creel, S.C., & Jimenez, (2012). Differences in Talker Recognition by Preschoolers and Adults. *Journal of Experimental Child Psychology*, 113, 487-509**