Dr. Stephen Lindsay
Editor in Chief, *Psychological Science*

April 6, 2016

Dear Dr. Lindsay,

We are pleased to submit an original research article entitled *Real-time lexical comprehension in young children learning American Sign Language* for publication in *Psychological Science*.

Finding meaning in a spoken or signed language is a fundamental skill that requires learning to establish reference during real-time interaction – relying on audition to interpret spoken words, and on vision to interpret manual signs. Earlier studies have used children's gaze to index the time-course of spoken language comprehension (e.g., Fernald et. al., 2006), demonstrating continuities between variation in real-time processing efficiency in toddlers and later language outcomes (Marchman & Fernald, 2008). The importance of real-time language processing has also been shown in diverse populations of Spanish speakers (Weisleder & Fernald, 2013) and pre-term children (Marchman et al., 2015). Are the advantages of early processing efficiency restricted to learners of spoken languages? Until now, no previous research has established the significance of language processing skill in young children learning a *visual language*.

Here we ask whether children learning American Sign Language (ASL) develop skill in real-time processing of signs in parallel ways to children learning spoken language. We show that ASL learners' become more efficient at interpreting signs in real time over the 2nd and 3rd years of life, and that these early comprehension skills are associated with vocabulary size, revealing linking real-time ASL processing and language learning. We also show that deaf and hearing ASL learners process ASL in qualitatively similar ways, suggesting that these skills are driven by experience with a visual language, and not by deafness. These new findings show striking parallels between the development of language comprehension in visual language learners and in children learning spoken languages.

We believe that this research is worthy of publication in *Psychological Science* because this is the first study to use precise measures of language processing, developed for spoken languages, with children learning a visual-manual language. The striking parallels suggest that processing efficiency is a skill fundamental to language learning regardless of language modality. Our findings will be of interest to those readers interested in basic human cognitive processes, as well as those who study language development, sign languages, deafness, and language comprehension.

This manuscript has not been published and is not under consideration for publication elsewhere. Please note that Amy Lieberman and Arielle Borovsky were both students with Dr. Fernald at Stanford, and that Dr. Fernald serves as a consultant on an NIDCD grant with Rachel Mayberry, so there would be a potential conflict of interest if Drs. Lieberman, Borovsky, or Mayberry served as reviewers. Other possible reviewers with deep expertise in language development in ASL (all unfamiliar with this research) include Karen Emmorey, Rain Bosworth, Jennie Pyers, or any of the faculty at Gallaudet University such as Laura-Ann Petitto or Thomas Allen.

Thank you for your consideration.

Sincerely,

Kyle MacDonald (kyle.macdonald@stanford.edu)
PhD Candidate, Department of Psychology
Stanford University