The world is a dramatically changing stage of events. How do infants perceive information from their surroundings? And how do they learn to act appropriately? For the last four years, I have been driven by such fascinating questions, and my passion grew stronger after gaining hands-on research experience.

My training in developmental research started in Dr. NAME REDACTED lab at UNIVERSITY NAME REDACTED. Our work focused on how infants and toddlers learn to differentiate videos that allow for contingent, social interactions (Skype calls, Facetime, etc.) from videos that do not (e.g., Sesame Street). We compared infants' behavioral and physiological responses—heart rate, respiration rate, and skin conductance—to displays of an interactive video call with their caregiver, a pre-recorded video call from Elmo, and a face-to-face interaction with their caregiver. Through this project, I gained useful skills for cleaning and analyzing physiological data from infants. To my surprise, 6-month-old infants differentiated different types of interactions. I was fascinated by how psychologists carefully craft experiments to examine how infants perceive and process information. Work in Dr. NAME REDACTED lab inspired me to enroll in the Master's Program at UNIVERSITY NAME REDACTED to prepare myself for doctoral studies.

As a Master's student in Dr. NAME REDACTED lab, I am studying two fascinating types of errors in motor planning and implementation as a window into perception-action development. My first project examines errors in infant locomotion—the frequency and severity of infant falls during free play. As the lead on the project, I help to train and supervise a team of undergraduates, and communicate with Dr. NAME REDACTED, a falling expert at UNIVERSITY NAME REDACTED. I have acquired a suite of important research skills—designing and implementing behavioral coding from video, data processing, writing analysis scripts in Matlab and SPSS, and perhaps most important, how to think independently and push a research question into promising new directions. We find that infants averaged 11 falls per hour, but the falls were not serious. Babies rarely cried, caregivers rarely showed concern, and infants were back at play within 3 seconds. These results

highlight a critical question: Why don't infants get hurt given their frequent falls, and what is the developmental implication of frequent, non-serious errors in walking? We hypothesize that a low penalty for error is a phenomenon that occurs across different developmental domains (motor development, language acquisition, etc.), especially for skills that require an immense amount of experience, so that infants will not be deterred from practicing to the point of mastery.

My second project reveals the behavioral and neural mechanisms underlying a fascinating pattern of errors in young children's motor planning and tool use. Some 4-year-olds use a habitual, inflexible grip to grasp the handle of a hammer, even when the handle points away from their reaching hand. This type of grip prevents children from efficiently using the tool. We developed a novel combination of recording methods—head-mounted eye tracking, EEG, motion tracking, and video—to investigate the factors that lead to errors in tool use. I learned to set up and implement each technology and to monitor the EEG data collection in real time. We find that children who use an inflexible hammer grip do not focus on goal-related objects, show undifferentiated EEG readiness potential pattern (slow negativity in EEG signal) prior to action, and display variable reach trajectories. Currently, I am interested in the extent to which flexibility in one area transfers to other areas. Does flexibility in grasping the handle of a tool transfer to other manual tasks? Does flexibility in walking over one kind of obstacle transfer to other types of obstacles?

I want to pursue my graduate career at UNIVERSITY NAME REDACTED to understand perception-action relations, to unravel the processes and quirks in development and learning, and to spark my own potential. After spending a year in Dr. NAME REDACTED lab, I am convinced that this program of research fits my interests perfectly, and would be the ideal place for me to realize my goal of becoming an independent researcher in the area of child development.