How the Speechome Recorder Can Change Our Understanding of Developmental Trajectories

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Current longitudinal designs used by developmental researchers are limited, as intervals between data collection are large, and thus changes occurring during development may not be fully captured. Adolph et al. (2008), for example, found that sensitivity in tracking children's motor development dropped sharply when data collection intervals change from daily to 2-3 day intervals. Whether a similar effect is seen when examining development in language is investigated here.

We first tracked the development of future tense in one child, [Audrey], between the age of 33-37 months, using a novel device that can capture dense, daily video-audio recordings of adult-child interactions: the Speechome Recorder. A total of 34.14 hours over 36 sessions (M_{length}=59.65 min) was recorded, transcribed, and then analyzed for uses of the future tense. We then extracted data from the complete set to reflect data collection at weekly, bi-weekly, and monthly intervals. Best-fit lines of the different trajectories of future tense uses were then compared.

Examining the complete data set, we find that Audrey produced three forms for the future: "going to" (106 instances), "will" (78 instances), and "I'm a" (e.g., *I'm a walk*; 72 instances). Both "going to" and "I'm a" trajectories were best-fitted with a cubic model while "will" was best-fitted with a quadratic model. Distortion of the developmental trajectories began to emerge with weekly sampling; the "will" trajectory became better characterized with a linear model and "going to" and "I'm a" with quadratic models. The most dramatic change occurred with the monthly sampling interval, where all three frames were best characterized with linear models.

Using intervals typically found in language development research distorted the developmental shape of all three future frames. This suggests that in order to accurately model language development, tools that allow for more dense data collection, such as the Speechome, may be needed.