Stable Handedness During Infancy Predicts Advanced Language Skills at Two Years of Age

Eliza L. Nelson¹, Julie M. Campbell² and George F. Michel¹²

¹Center for Developmental Science, University of North Carolina at Chapel Hill
²Department of Psychology, University of North Carolina at Greensboro

Background and Aims

- Fluctuations in infant hand use have led many researchers to incorrectly conclude that infant handedness is generally unstable.
- In fact, multiple investigators have now shown that some infants have stable preferences while others have variable trajectories.
- The question posed in this study is whether stable handedness during infancy confers any advantages in development.
- We hypothesized that early hemispheric specialization for motor skills (i.e., stable infant handedness) boosts language acquisition.
- We predicted that children with a stable infant hand preference would have higher language scores as toddlers as compared to children without a stable hand preference during infancy.

Procedure

- We examined hand use monthly from 6 to 14 months (infant visits; Fig. 1) and from 18 to 24 months (toddler visits; Fig. 2).
- We collected data on language, cognitive, and general motor skills at 2 years of age using the Bayley third edition (Bayley, 2006). The Bayley composite scales are normed at 100 with a standard deviation of 15.

Participants

- 38 children (21 females) participated in this longitudinal study.
- Inclusion criteria was a full-term delivery without complications.
- The sample was 65% Caucasian White, 15.8% African American, 13.2% Multiracial, 2.6% Hispanic, and 2.6% Other Race.
- The median family income was $70,000 – $79,999.
- The median education level for parents was a Bachelor’s degree.
- Mann-Whitney U tests found no effects of income, mother’s education level, or father’s education level on infant handedness.

Results and Discussion

- Children were grouped by infant handedness status as right-handed (N=15) or no hand preference (N=23) and by toddler status as right-handed (N=29) or left-handed (N=8). One child had no preference by 2 years and was not included in the toddler analyses.
- Stable right-handedness in infancy boosted language ability measured at 2 years of age. This finding was not a result of cognitive or motor differences between handedness groups (Fig. 3).
- Handedness is neither necessary or sufficient for language acquisition, but the timing of handedness may shift the timing of language skills (Fig. 4).
- Overall, these results build on previous literature linking right-handedness and language across the lifespan.