18-24 months Handedness Predicts 36 months Expressive Language Skills

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Background and Aims

- Previous longitudinal work found that a consistent right hand preference for object acquisition in infancy (6 to 14 months) predicted advanced language ability at 24 months.¹
- Here we are reporting on handedness trajectories for role-differentiated bimanual manipulation (RDBM) when children were toddlers (18 to 24 months) and language outcomes at 36 months in an extended sample.
- Previously, we were unable to parse language skill into language comprehension and expressive language abilities.
- Our aim was to (1) examine whether handedness trajectories continue to be linked to later language outcomes and (2) assess the contribution of comprehension and expressive abilities to the link between motor skills and language ability.

Methods

- **Participants**: 59 children (29 females) completed the RDBM hand preference task during 18-24 month visits, and returned at 36 months for a language assessment.
- **RDBM Hand Preference**: Hand preference for RDBM was measured from 7 lab visits between 18-24 months of age. Figure 1 shows an example of an RDBM action. Hand preference was calculated using the Handedness Index [HI=(R-L)/(R+L)].
- **Language**: Language was assessed at 36 months using the Preschool Language Scales (PLS-5; Zimmerman et al., 2011). The PLS-5 has 2 subcales: Expressive Communication and Auditory Comprehension.
- Latent class growth analysis identified 4 trajectories for RDBM handedness based on HI scores as shown in Figure 2: (1) consistent left hand preference (8.5%), (2) mixed left hand preference (14.5%), (3) mixed right hand preference (24%), and (4) consistent right hand preference (53%).

Results and Discussion

- Mixed preference and consistent preference groups were combined for analyses, and independent samples t-tests compared the mixed preference group (38.4%) and the consistent preference group (61.6%) on PLS-5 total and subscale scores.
- Children with a consistent hand preference trajectory had significantly higher PLS-5 total scores compared to children with a mixed hand preference trajectory \(t(54) = -2.394, p = .02, d = .70\).
- **Figure 3** shows children with a consistent hand preference trajectory scored significantly higher on the PLS-5 Expressive Communication subscale \(t(46.55) = -3.281, p = .002, d = .88\). There was no significant difference between trajectory groups and PLS-5 Auditory Comprehension scores \(t(54) = -1.627, p = .110, d = 0.47\).

Take-Home Point: Consistency in handedness for RDBM actions from 18-24 months relates to language skill at 36 months. Specifically, expressive language ability, but not comprehension, accounts for this relationship.

References and Acknowledgements

¹Nelson et al. (2013). DOI: 10.1037/a0033803
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