Background and Aims

- Recent literature highlights the cascading effect of motor development on typically denoted “non-motor” domains, such as language and academic achievement. 1-3
- Previous longitudinal work identified that a consistent hand preference for reaching to and acquiring objects from 6-14 months predicted language ability at 24 months. 1
- Following this sample into their preschool years, here we report on hand preference trajectories for role-differentiated bimanual manipulation (RDBM) in relation to language outcomes at 5 years.
- Aim: Examine if there is a continued relation between consistent vs. inconsistent hand preference trajectories and language outcomes when approaching school age.

Methods

- Participants: 25 children were assessed for RDBM hand preference and language ability using a longitudinal design (see Figure 1 for an example RDBM action).
- Pre-school Hand Preference: Mean percentage of right-hand use (%R) with 95% CI across 2, 3, and 5 years was calculated. Children with %R ≤ CI crossing 50% by more than 5% were classified as having an inconsistent hand preference.
- Language: Language was assessed using the Preschool Language Scales (PLS-5) at 3 and 5 years old. The PLS-5 has 2 subscales: Expressive Communication (PLS-5 EC) and Auditory Comprehension (PLS-5 AC), allowing for separate analyses relating to expressive and receptive language.
- Analyses: 1) Independent samples t-tests (IV: consistent and inconsistent Pre-K hand preference trajectories, DVs: PLS-5 AC and PLS-5 EC scores). 2) Correlations between %R at 2, 3, and 5 years, 3) correlations between 5 year PLS-5 scores and previously collected 3 year PLS-5 scores.

Results and Discussion

- Seventy-five percent of children demonstrated a consistent hand preference. Based on mean %R across 2, 3 and 5 years, 69% had a right hand preference, 12% had a left hand preference, and 19% had no preference.
- Correlations between 2, 3, and 5 year %R (see Figure 2) and 3, 5 year PLS-5 scores (see Figure 3) were calculated. Percentage of right hand use was correlated at each time point, indicating consistency over time in hand preference.
- Consistent Pre-K hand preference was correlated with language ability at 5 years of age, indicating consistency over time in hand preference.

Table 1

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<tr>
<td>1. %R 2 years</td>
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<td>2. %R 3 years</td>
<td>.854**</td>
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<td>3. % R 5 years</td>
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Table 2

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<tr>
<td>1. PLS-5 EC 3 year</td>
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<tr>
<td>2. PLS-5 AC 3 year</td>
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<td>.808*</td>
<td>.532*</td>
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<tr>
<td>3. PLS-5 EC 5 year</td>
<td>.489*</td>
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<td>4. PLS-5 AC 5 year</td>
<td>.766*</td>
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Take-Home Points

Consistent Preschool Hand Preference (2, 3, 5 years) ➔ Expressive Communication at 5 years of age.
Consistent Preschool Hand Preference (2, 3, 5 years) ➔ Auditory Comprehension at 5 years of age.
Percentage of right hand use was correlated at each time point, indicating consistency over time in hand preference.
PLS scores at 3 and 5 years of age were correlated, indicating consistency over time in language outcomes.

References and Acknowledgements

1 Nelson et al. (2013). DOI: 10.1037/a0033803
4 Correspondence to: Sandy Gonzalez (sgonz219@fiu.edu).

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