

Consistent Preschool Hand Preference Predicts Language Skills At 5 Years Of Age

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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.



Fig.1. RDBM action.

- 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.

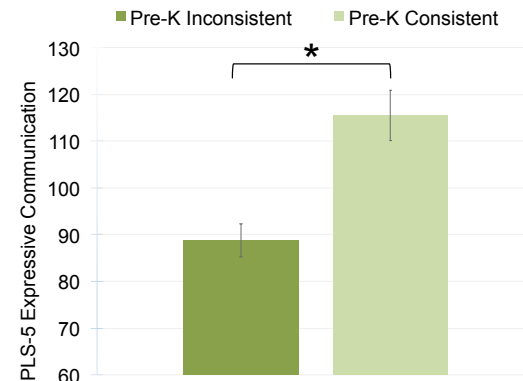


Fig. 2. Pre-K hand preference groups on PLS-5 EC
 $t(23) = -2.390, p = .025, d = 1.48$

Table 1

Correlations between 2, 3, and 5 year %R

	1	2
1. %R 2 years	-	
2. %R 3 years	.854**	-
3. % R 5 years	.925**	.875**

**p < .001

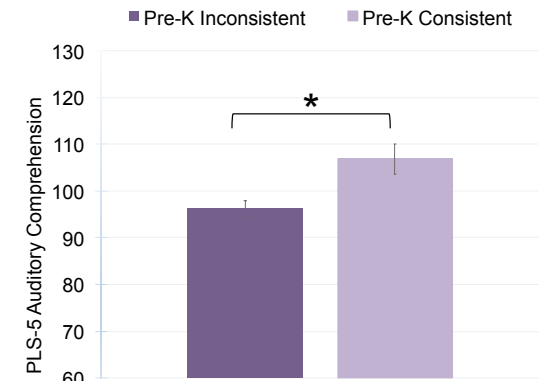


Fig. 3. Pre-K hand preference groups on PLS-5 AC
 $t(23) = -2.897, p = .008, d = 1.01$

Table 2

Correlations between 3 and 5 year PLS-5 scores

	1	2	3
1. PLS-5 EC 3 year	-		
2. PLS-5 AC 3 year	.808*	-	
3. PLS-5 EC 5 year	.489*	.532*	-
4. PLS-5 AC 5 year	.766*	.744*	.475*

*p < .05

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

² Bornstein et al., (2013). DOI: 10.1177/0956797613479974

³ Dinehart & Manfra (2013). DOI: 10.1080/10409289.2011.636729

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