

Title: Quantify and compare trajectories of problem-solving skills in common childhood toys

PRESENTER: Becky Molinini
 molininirm@vcu.edu

INTRO:

- Young children use toys to acquire and express understanding of problem-solving
- Clinicians use toys to teach and quantify problem-solving
- BUT it is unclear how different toys afford opportunities for advancing problem-solving skills of varying difficulty
- **Purpose:** Quantify the trajectory of problem-solving skills *within* and *between* toys in children with motor delays

METHODS

- **Population:** 134 infants with motor delays

Mild Motor Delay N=68 Mean baseline age = 9.82	Significant Motor Delay N=66 Mean baseline age = 11.69
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- **Assessment:** All infants were assessed with the Assessment of Problem-Solving in Play up to 5 times across 12 months
- Children were given three toys, each for 2 minutes.
- Three problem-solving skills were scored for each toy:

1. Simple Explore: exploring toys for perceptual input

- Popup: banging or fingering the buttons; Cups: mouthing or throwing; Tower & Balls: shaking or rotating balls

2. Complex Explore: trying unsuccessfully to execute a function of the toy

- Popup: trying to push an animal down; Cups: stacking a larger cup on a smaller cup; Tower & Balls: taking balls out of the tower

3. Function: playing with the toy as it is designed

- Popup: popping up/pushing down one animal; Cups: nesting/stacking cups; Tower & Balls: putting a ball in the tower or using the lever to remove ball from tower

- **Analysis:** Linear mixed modeling with random effects compared rate of simple explores, complex explores, and functions overtime *within* and *between* each toy stratified by motor severity.

Different toys elicit different problem-solving skills in young children with motor delays



Popup Toy

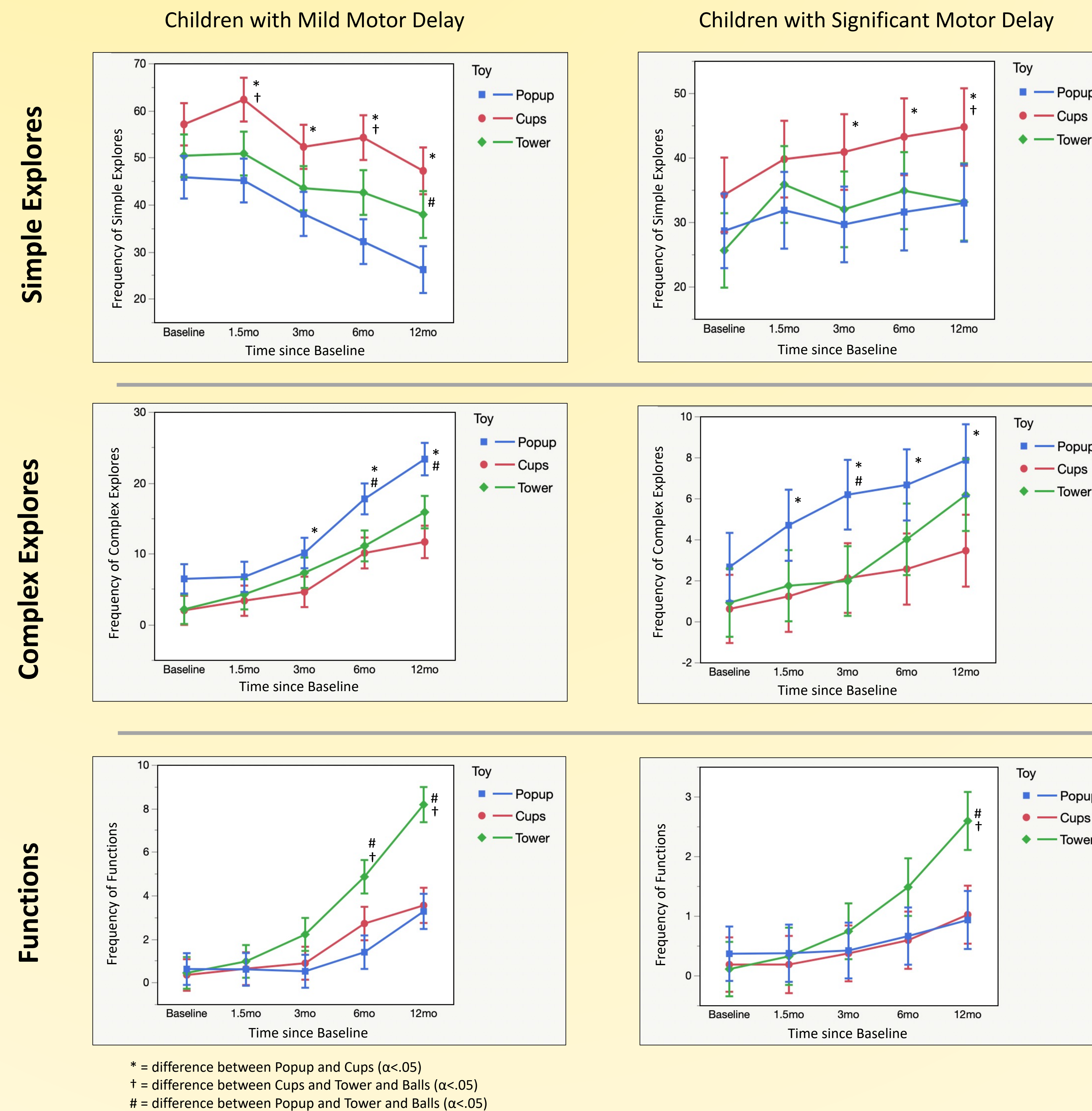


Nesting cups

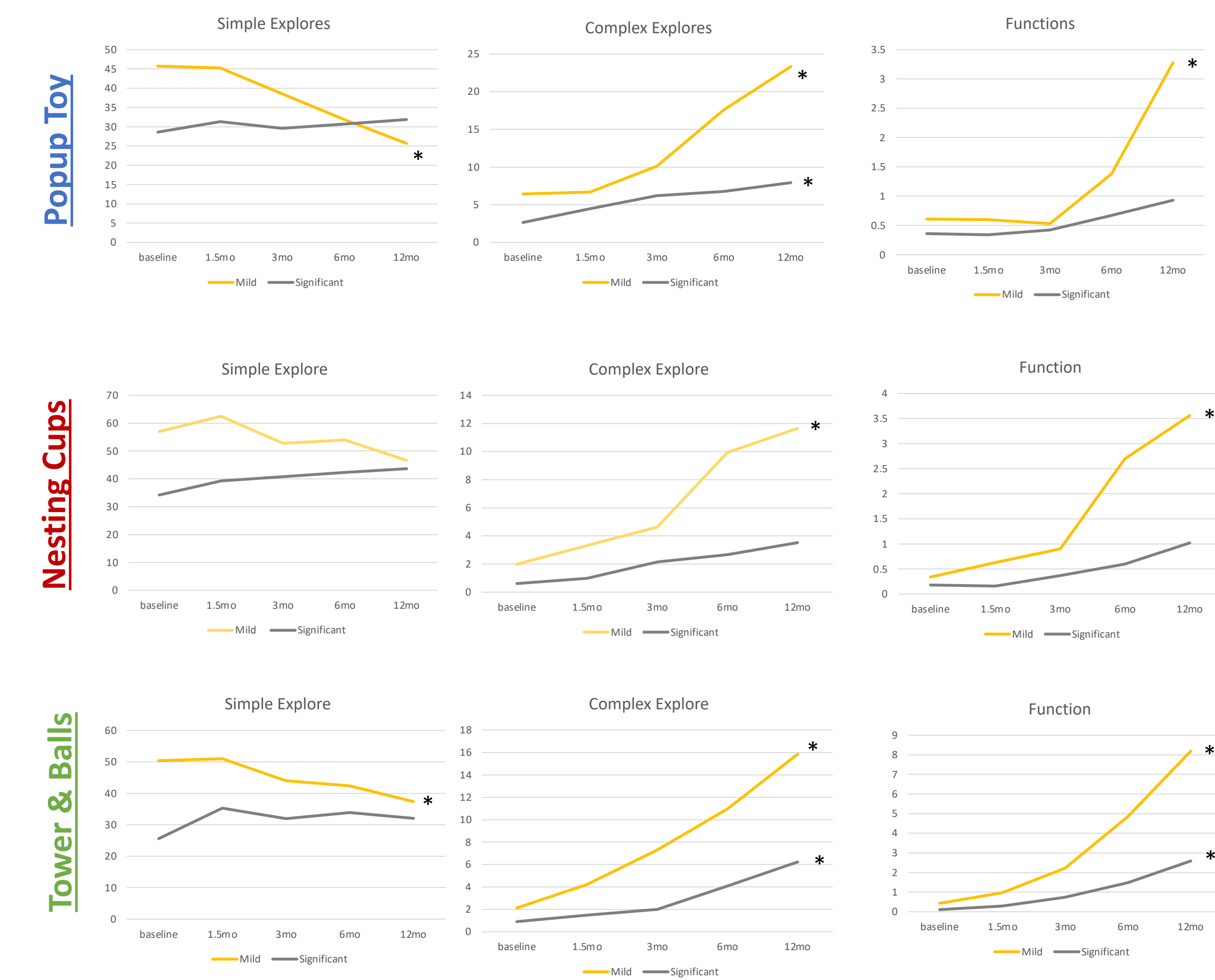


Tower and Balls

RESULTS Between toys:



RESULTS Within toys:



Conclusions & Clinical Relevance:

- Different toys elicit different problem-solving skills, possibly due to the motor and cognitive demands inherent to each toy
- Using multiple toys to assess and track problem-solving may provide a more accurate reflection of children's repertoire of problem-solving skills
- Comparison of problem-solving should not be made among children or across time when there is a lack of consistency in the toys used

References:

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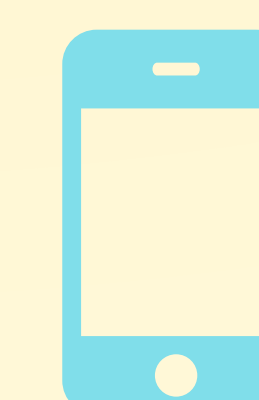
Rebecca M Molinini, PT, Ketaki Inamdhar, MPT,
 Regina T Harbourne, PT, PhD, Michele A Lobo, PT, PhD,
 Sarah W McCoy, PT, PhD, James A Bovaird, PhD,
 Stacey C Dusing, PT, PhD



VCU Motor Development Lab



VCU College of Health Professions
 Physical Therapy



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