

## **Lillie Moffett**

**Project Title:** Math and Executive Functioning Circle-Time Games: A Coaching Framework with Head Start Teachers

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### **Project Abstract:**

Preschool teachers are typically less knowledgeable about children's math development compared to literacy, language, and social-emotional learning. In the Los Angeles context, specifically, preschool teachers report having little access to math instructional training and supports (Barrett, 2017).

While there have been several successful math curricula implemented in Head Start preschool classrooms, most Los Angeles-based centers still use whole-child curricula that place little emphasis on math instruction. A recent policy report revealed that Head Start preschool teachers often feel overwhelmed implementing content-focused curricula given the competing demands of children's behavioral and social-emotional needs (Jacoby & Lesaux, 2017). A potential solution is to provide supplemental activities that integrate math content with executive functioning (EF) skills. Children's working memory, response inhibition, and cognitive flexibility—the primary components of EF—serve as major underpinnings of successful behavioral self-regulation in the classroom. Thus, integrating math and EF skills may provide teachers with a balance of providing academic content while simultaneously supporting children's ability to regulate their cognition and behavior during learning activities. To date, there have been several promising interventions demonstrating the benefits of explicitly exercising EF within a math domain (e.g. **integration**; Farran, Lipsey, & Wilson, 2011; Iseman & Naglieri, 2011; Capraro, Capraro, & Rupley, 2011)—and how this may prove more effective than having teachers implement two separate EF and math curricula simultaneously (e.g., Clements, Sarama, Unlu, & Layzer, 2012).

The aim of the current study is to assess the feasibility of implementing integrated math and EF activities with teachers in preK classrooms—as well as an accompanying program of instructional coaching support. These activities will be implemented during circle-time and small-group instruction in 10 Los Angeles-based Head Start classrooms. Teachers will implement integrated activities using easily creatable materials, as well as exercise agency in tailoring the activities to complement their existing curricula and schedule of the day. Each activity covers a specific math topic (e.g., geometry; addition; patterning, etc.) integrated with EF—explicitly exercising working memory, response inhibition and cognitive flexibility skills. The coaching framework will serve as a foundation to support Los Angeles based Head Start Centers in the increased inclusion of math and other STEM-based instruction in the classroom, while simultaneously enhancing children's EF development.

### **Research Questions:**

- 1) How do the teachers and their coaches respond to the activities? (e.g., do they find activities enjoyable and beneficial for their students? Feasible to implement? Are they motivated to continue using them? Is there anything they would change? etc.) (qualitative survey data- year 1)
- 2) How do the teachers and their coaches respond to the coaching framework? (qualitative survey data- year 1)

3) How well do teachers implement the math/EF activities? (fidelity observations- year 1)

4) Do children in classrooms who receive math/EF activity coaching make significantly more gains in math skills than the national norm of growth for preK children on the same math assessment? (year 2)