

## Research Award Brief

### The Relationship between Teachers' and Students' Executive Functioning: Elucidating Contexts for Early Learning (2016 - 2018)

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**Research Question:** Do teachers' and children's cognitive and emotional executive functioning influence each other in early care and education settings in ways that could shape teaching and learning? Are children who are more biologically reactive to stress in their environment particularly sensitive to their teachers' executive functioning?

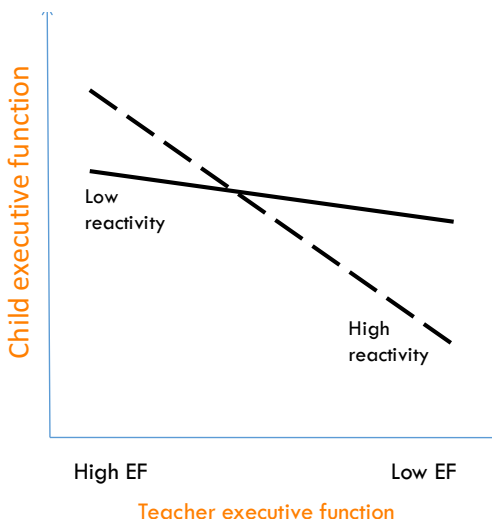
**Interdisciplinary Approach:** Integrating expertise in neuroscience and early childhood education, this project seeks to explain how teacher and child capacities interact to shape cognitive and behavioral development in low-income children.

**Potential Implications of Research:** This project can inform tailored teacher-, child-, and teacher/child dyad-focused interventions to support executive function development in early childhood education settings.

Young children's executive functioning (EF) has critical implications for success in the transition to formal schooling. EF is defined as the ability to set a goal, make goal-directive plans, inhibit a dominant response, and activate subdominant responses in order to achieve the goal. Children with higher EF demonstrate greater academic achievement, social skills (e.g., positive relationships with peers and teachers), and goal-oriented motivation, more mature learning approaches, and increased capacity to follow rules and directions at school. Thus, it is important to support children's EF development during the preschool years because children rapidly develop EF during this period.

In early care and education (ECE) arrangements, teachers set the tone for nurturing climates that foster students' EF development. Prior evidence suggests that young children's EF can best be supported by sensitive and responsive caregiving, ample opportunities to explore social and physical environments, encouragement towards sustained attention, planning, goal-directive behavior, problem-solving skills, and emotional understanding from caregivers (Lengua, Honorado, & Bush, 2007). Despite the important role that teachers play in ECE, little is known about teachers' own abilities to solve problems and to regulate their emotions, and how these capacities influence their students. Teachers with lower EF may experience more difficulty managing their classrooms, which, in turn, may hamper students' opportunities to develop EF; conversely, those with higher EF may provide more effective guidelines for children's EF development.

Therefore, the first aim of our project is to examine the effects of Head Start teachers' EF on their 3- to 4-year old students' EF. In addition, because individuals' cognitive thought processes and management of emotion are reciprocally influenced by relational context, we will examine whether children also actively impact teachers' EF. For example, children with poor EF may demand more attention from teachers, which in turn, may elicit teachers' stress and diminish the ability to regulate their own emotions. The exploration of mutual influences between teachers' EF and children's EF will inform interventions in support of the EF of both teachers and children to optimize the quality of ECE.



**Figure 1.** Differential susceptibility to teacher EF

The second aim of the project is to explore differential susceptibility theory (Belsky, 1997; Boyce & Ellis, 2005; Ellis et al., 2011) within a school context. The theory suggests that individuals' susceptibility to their environment differs by how they respond to stressors biologically;

specifically, the effects of teachers' EF on children's EF may differ by the level of children's physiological stress reactivity. As shown in Figure 1, students who are more reactive are hypothesized to be more influenced by teachers' EF (whether positive or negative) because they more fully absorb environmental features; and those who are less reactive to environments are hypothesized to be less susceptible to teachers' EF. This project can help elucidate the underlying mechanism of the associations between teachers' EF and children's EF depending on children's physiological stress reactivity in order to individualize interventions in ECE settings.