

# Child Care & Early Education RESEARCH CONNECTIONS

## Interventions to Promote Young Children's Self-Regulation and Executive Function Skills in Early Childhood Settings

Self-regulation refers to the ability to control one's emotions, behaviors, and cognitions (Willoughby, Kupersmidt, Voegler-Lee, & Bryant, 2011). Self-regulation includes both emotional regulation skills (the ability to moderate emotions through cognitive and behavioral strategies) and executive function skills (which include working memory, inhibitory control and cognitive flexibility) (Ursache, Blair, & Raver, 2012). These components of self-regulation work together and have been shown to predict school readiness and academic performance. Previous research indicates that children who have difficulty regulating their emotions and behaviors have lower academic achievement and have been found to receive less instruction and to be less engaged in learning (Graziano, Reavis, Keane, & Calkins, 2007). Additionally, certain groups of children who display behavioral problems are more susceptible to being excluded from preschool (Gilliam, 2005). As a result early intervention that can target the promotion of self-regulation skills is important. In recognition of the importance that behavioral self-regulation and social-emotional development plays in improving outcomes for young children, the Office of Child Care recently released a Policy Memorandum to all State, Territorial and Tribal Lead Agencies administrating child care programs under the Child Care and Development Block Grant, highlighting state policies to promote the social-emotional and behavioral health of young children in child care settings (United States, Office of Child Care, 2015).



This **Topic of Interest** highlights research specifically focused on interventions to improve young children's self-regulation and executive function skills, in preschool and kindergarten settings.

### **Overviews of Research on Self-Regulation Interventions**

The following recent articles provide a summary of research on various self-regulation interventions that have been conducted with preschoolers:

- Blair, C., & Raver, C. (2015). School readiness and self-regulation: A developmental psychobiological approach. *Annual Review of Psychology*, 66, 711-731.
- Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4 to 12 years old. *Science*, 333, 959-964.
- Ursache, A., Blair, C., & Raver, C. (2012). The promotion of self-regulation as a means of enhancing school readiness and early achievement in children at risk for school failure. *Child Development Perspectives*, 6(2), 122-128.

### **Large-Scale Randomized Control Trials**

Several large-scale randomized control trials examining the promotion of self-regulation and executive function skills have been conducted in preschool and kindergarten settings.

*Chicago School Readiness Project (CSRP)* was a classroom-based intervention designed to improve low-income preschool age children's self-regulation skills. It combined teacher training in classroom management strategies (based on the Incredible Years program (What Works Clearinghouse (Institute of Education Sciences), 2012)) with a classroom-based mental health consultant.

- Raver, C., Jones, S. M., Li-Grining, C. P., Zhai, F., Bub, K. L., & Pressler, E. (2011). CSRP's impact on low-income preschoolers' preacademic skills: Self-regulation as a mediating mechanism. *Child Development*, 82(1), 362-378.

*Foundations of Learning (FOL)* expanded on CSRP and tested the intervention in 71 preschool centers in Newark, New Jersey and Chicago, Illinois.

- Morris, P. A., Lloyd, C. M., Millenky, M., Leacock, N., Raver, C., & Bangser, M. (2013). *Using classroom management to improve preschoolers' social and emotional skills: Final impact and implementation findings from the Foundations of Learning demonstration in Newark and Chicago*. New York: MDRC.

*Promoting Alternative Thinking Strategies (PATHS)* is a social emotional curriculum designed to reduce children's problem behavior by supporting their ability to self-regulate. Twenty Head Start classrooms in two Pennsylvania communities participated in a study to evaluate the effectiveness of the curriculum in a preschool setting.

- Domitrovich, C. E., Cortes, R., & Greenberg, M. T. (2007). Improving young children's social and emotional competence: A randomized trial of the preschool "PATHS" curriculum. *Journal of Primary Prevention, 28*(2), 67-91.

*Head Start REDI (Research-based Developmentally Informed)* is a program that was designed as an enrichment intervention for Head Start classrooms. The intervention included lessons, center-based extension activities and training in specific teaching strategies. It was designed to promote language and literacy skills and social-emotional competence and included the use of the preschool PATHS curriculum.

- Bierman, K. L., Domitrovich, C. E., Nix, R. L., Gest, S. D., Welsh, J. A., Greenberg, M. T., Blair, C., & et al. (2008). Promoting academic and social-emotional school readiness: The Head Start REDI program. *Child Development, 79*(6), 1802-1817.
- Bierman, K. L., Nix, R. L., Heinrichs, B. S., Domitrovich, C. E., Gest, S. D., Welsh, J. A., & Gill, S. (2014). Effects of Head Start REDI on children's outcomes 1 year later in different kindergarten contexts. *Child Development, 85*(1), 140-159.

*Tools of the Mind* is a play-based preschool curriculum combined with teacher professional development designed to promote the development of executive function as a means to enhance student learning and engagement.

- Barnett, W., Jung, K., Yarosz, D. J., Thomas, J., Hornbeck, A., Stechuk, R. A., & Burns, M. (2008). Educational effects of the Tools of the Mind curriculum: A randomized trial. *Early Childhood Research Quarterly, 23*(3), 299-313.
- Blair, C., & Raver, C. (2014). Closing the achievement gap through modification of neurocognitive and neuroendocrine function: Results from a cluster randomized controlled trial of an innovative approach to the education of children in kindergarten. *PLoS One, 9*(11), 1-13.
- Diamond, A., Barnett, W., Thomas, J., & Munro, S. (2007). Preschool program improves cognitive control. *Science, 318*(5855), 1387-1388.
- Farran, D., & Wilson, S. (2014). *Achievement and self-regulation in pre-kindergarten classrooms: Effects of the Tools of the Mind curriculum*. Nashville, TN: Vanderbilt University, Peabody Research Institute.

The *Head Start CARES* demonstration evaluated the effects of three classroom-based approaches to enhancing children's social-emotional development, the Incredible Years Teaching Training Program, PATHS preschool curriculum, and Tools of the Mind.

- Morris, P. A., Mattera, S. K., Castells, N., Bangser, M., Bierman, K. L., & Raver, C. (2014).

*Impact findings from the Head Start CARES demonstration: National evaluation of three approaches to improving preschoolers' social and emotional competence.* (OPRE Report 2014-44). Washington, DC: U.S. Administration for Children and Families, Office of Planning, Research and Evaluation.

## **Small-Scale Experimental Studies**

Mindfulness-based practices such as meditation and yoga have also been tested as a way to promote self-regulation among preschool children.

- Flook, L., Goldberg, S. B., Pinger, L., & Davidson, R. J. (2015). Promoting prosocial behavior and self-regulatory skills in preschool children through a mindfulness-based Kindness Curriculum. *Developmental Psychology*, 51(1), 44-51.
- Razza, R. A., Bergen-Cico, D. K., & Raymond, K. (2015). Enhancing preschoolers' self-regulation via mindful yoga. *Journal of Child and Family Studies*, 24(2), 372-385.

Circle Time games are games that are variations of popular children's games, such as 'Red Light, Green Light' and 'Freeze dance'. One study incorporated these games into the preschool classroom through the use of playgroups. The goal of the intervention was to improve behavioral self-regulation in a sample of preschoolers.

- Tominey, S., & McClelland, M. (2011). Red light, purple light: Findings from a randomized trial using circle time games to improve behavioral self-regulation in preschool. *Early Education and Development*, 22(3), 489-519.

A summer treatment program targeted to pre-kindergarteners with externalizing behavior problems combined a behavior modification system, parent training, a social emotional/self-regulation curriculum (that included circle time games), and a literacy curriculum. The goal of the intervention was to improve school readiness outcomes including self-regulation skills.

- Graziano, P. A., Slavec, J., Hart, K. C., Garcia, A., & Pelham, W. E. (2014). Improving school readiness in preschoolers with behavior problems: Results from a summer treatment program. *Journal of Psychopathology and Behavioral Assessment*, 36(4), 555-569.

## **Datasets**

Explore the Head Start CARES dataset (Morris, 2017)

## **Current OPRE Funded Project**

The Office of Planning Research and Evaluation has commissioned a series of reports on the topic of Self-Regulation and Toxic Stress. Two reports have been released so far: *Foundations for Understanding Self-Regulation from an Applied Developmental Perspective* (Murray, Rosanbalm, Christopoulos, & Hamoudi, 2015); and *A Review of Ecological, Biological, and Developmental Studies of Self-Regulation and Stress* (Hamoudi, Murray, Sorensen, & Fontaine, 2015). A third report examining the evidence for interventions to promote self-regulation is forthcoming and will be titled: *A Comprehensive Review of Self-Regulation Interventions from Birth through Young Adulthood*. Finally, a fourth report that examines implications for program and practice will also be released.

Explore additional resources on a range of topics related to self-regulation and executive function.

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- United States. Office of Child Care. (2015). *Information memorandum: State policies to promote social-emotional and behavioral health of young children in child care settings in partnership with families*. (Log No: CCDF-ACF-IM-2015-01). Washington, DC: U.S. Office of Child Care.
- Ursache, A., Blair, C., & Raver, C. (2012). The promotion of self-regulation as a means of enhancing school readiness and early achievement in children at risk for school failure. *Child Development Perspectives, 6*(2), 122-128.
- What Works Clearinghouse (Institute of Education Sciences). (2012). *Early childhood education interventions for children with disabilities: The Incredible Years*. Washington, DC: What Works Clearinghouse (Institute of Education Sciences).
- Willoughby, M. T., Kupersmidt, J., Voegler-Lee, M., & Bryant, D. M. (2011). Contributions of hot and cool self-regulation to preschool disruptive behavior and academic achievement. *Developmental Neuropsychology, 36*(2), 162-180.