



Executive Function

What is Executive Function?

Executive functions or self-regulation serves as the foundation for life-long functioning in such areas as critical thinking and problem-solving, planning, decision making and executing tasks. Executive functions or self-regulatory capacities are the building blocks for a range of important skills. These skills mature at different rates and develop over time (Diamond, 2013; Jones, 2016; Zelazo et al., 2016). Working memory and self-control are among the first set of executive functions that develop (typically during the early childhood), setting the stage for attentional capacities and goal directed behavior during the pre-teens years, better planning and refined goal-directed behavior during adolescence, and more efficient problem-solving, decision making and cognitive flexibility in adulthood.

The experience of trauma, especially when it is prolonged, can disrupt executive functioning skills. Children who have experienced prolonged or pronounced stress and adversity, including poverty and trauma experiences, may struggle more than other children do to regulate their thoughts, feelings, and behaviors (Murray et al., 2015; Zelazo et al., 2016). Severe childhood stress appears to have lasting effects, with executive function or self-regulation related difficulties seen into adulthood. In addition, adolescents who report having experienced trauma, such as maltreatment or exposure to a parent's intimate partner violence, have been found to be less effective than their peers at controlling their attention, regulating their emotions, and planning. Adults whose overall functioning has been compromised by adversity and continued stress are less likely to engage in intentional self-regulation, and have difficulty with problem solving, and impulse control (Lupien, et al., 2009). Less is known about the effects of trauma in adulthood on executive functioning and related skills.

Why the Concept of Executive Function is Important to Human Services

Executive functions involve regions of the brain associated with information processing, (including such functions as attention and working memory), regulating emotions and behavior (including such functions as impulse control and suppressing inappropriate responses), and even creativity and some aspects of personality. (Diamond, 2013; Zelazo et al, 2016). Individuals who have problems with executive functions in childhood or adulthood may have difficulty with social appropriateness, planning projects, working independently, remembering details, paying attention, or starting and completing tasks.

Human service agencies can strive to build and enhance executive functioning skills for the children, youth and adults served in their programs. For individuals who are also impacted by toxic stress, trauma and other adverse experiences, improved executive functioning skills will be needed to promote engagement and participation in human service programs. Children and adults who can develop these skills may be better able to benefit from programs and services provided by human services agencies.





Developmental perspective. It is important for human service agencies to keep in mind that executive functioning skills change across development from infancy through late life (Jones, et al., 2016). For example, programs serving infants from birth to three years may be designed to support the child's ability to maintain focus and attention, show persistence in actions, and demonstrate an ability to be flexible in actions and behavior. Preschool programs may target increasing the child's ability to control impulses, maintaining focus, persisting in tasks, holding information and demonstrating flexibility in thinking and behavior. Programs serving older children may target additional developmentally appropriate skills and abilities, including planning, problem solving, and organizing. In adolescence and adulthood, programs may address reasoning, goal setting, and decision-making. Agencies focused on supportive care for older adults may offer cognitive health promotion programs that enhance cognition, memory and inhibitory control.

Relevant Interventions and Approaches

A wide range of activities requires executive functioning skills, and targeted interventions may foster these skills. Interventions to improve executive functions include programs to train working memory, mindfulness programs to help address focus and attention, providing routine structure and organization to facilitate task completion as well coaching to motivate behavior (Diamond, 2013; Murray et al., 2016; Zelazo et al., 2016). However, it is important to consider carefully how executive functioning and other regulation-related skills are defined and measured in research and evaluation. Programs that improve one specific skill will not necessarily lead to improvements in other related skills (Jones et al., 2016).

Human services agencies offer a range of social services and support for individuals, children and families, and adults throughout the lifespan. While the programs may differ in terms of target population, services provided, and outcomes expected, a general understanding of how executive functioning and self-regulation skills can foster optimal health, development and well-being will be important for all programs and staff. Human services agencies are well positioned to use information about the importance of executive functioning skills in program planning, design, implementation, staff development, and family engagement efforts.

Resources for Further Learning

- [How Early Experiences Shape the Development of Executive Function](#) 
- [Harvard University, Center on the Developing Child: Executive Function and Self-Regulation](#) 
- [Adele Diamond - Executive Functions, Department of Psychiatry, University of British Columbia and BC Children's Hospital, Vancouver.](#) 
- [Head Start Early Learning Outcomes Framework](#)
- Desiree Murray, et al. - [Self-Regulation and Toxic Stress: Foundations for Understanding Self-Regulation from an Applied Developmental Perspective](#)
- [Center on the Developing Child at Harvard University.](#)  [Building Core Capabilities for Life: The](#)



References

- Diamond (2013) [Executive Functions](#), Department of Psychiatry, University of British Columbia and BC Children's Hospital, Vancouver.
- Jones et al. (2016) [Executive Function Mapping Project Executive Summary: Untangling the Terms and Skills Related to Executive Function and Self-Regulation in Early Childhood](#).
- Lupien, S. J., McEwen, B. S., Gunnar, M. R., & Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behavior and cognition. [Nature Reviews Neuroscience](#), 10, 434-445.
- Murray et al. (2015) [Self-Regulation and Toxic Stress: Foundations for Understanding Self-Regulation from an Applied Developmental Perspective](#).
- Zelazo et al. (2016) [Executive Function: Implications for Education](#).

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