

CCSSO Inclusive Leadership Webisode Series
Webisode #11:
Strengthening Executive Function Skills: Evidence-Based Opportunities to Support All Learners

Dr. Jacquelyn Gamino, The University of Texas at Dallas'
Center for BrainHealth

James Lowry, The University of Texas at Dallas' Center for
BrainHealth

Holly McCormack, BrainFutures

Tuesday, April 7th 2-3PM ET

For more information about the CCSSO Inclusive Leadership Webisode Series, please e-mail: kizzy.blackwell@ccsso.org

Tech Norms

- ⌘ Log in to the WebEx system
- ⌘ Engage camera (helps with understanding in virtual meetings)
- ⌘ Upon entering, please share your name, role, and organization in the chat pod
- ⌘ Be in control... mute and unmute yourself
- ⌘ Please ask questions either via chat pod (at any time) or by raising your hand in WebEx (hand icon during discussion pieces)

CCSSO Inclusive Principal Leadership Webisode Series

Date/Time	Title	Description
Tuesday, April 7th: 2-3PM ET http://bit.ly/CCSSO-ILWebisode11	<i>Strengthening Executive Function Skills: Evidence-Based Opportunities to Support All Learners</i>	This webisode will focus on bolstering school leaders' knowledge of evidence-based practices to enhance executive function skills for all learners. Holly McCormack of Brain Futures and Dr. Jacquelyn F. Gamino and James Lowry at the University of Texas at Dallas, Center for BrainHealth will present.
Thursday, April 30th: 2-3PM ET http://bit.ly/CCSSO-ILWebisode12	<i>Preparing Inclusive Teachers and Leaders for Today's Students</i>	This webisode will focus on the preparation of inclusive teachers and leaders and include a focus on online preparation as educator preparation programs make shifts due to the novel coronavirus. Jackie Rodriguez and Caitlin Wilson of AACTE, Marvin Lynn of Portland State University, and Mary Murray of Bowling Green State University will present.
Wednesday, May 20th: 2-3PM ET http://bit.ly/CCSSO-ILWebisode13	<i>Creating Inclusive Environments In-Person and Online</i>	This webisode will focus on the practitioners' perspective of creating inclusive cultures and environments both for in-person and virtual settings as schools across the country are closed across the country due the novel coronavirus. Erin Studer of The Chime Institute will present.

Agenda

- ⌘ **Introduction and Framing**—James M. Paul and Kaylan Connally, CCSSO
- ⌘ **Research and Work of BrainFutures**—Holly McCormack, BrainFutures
- ⌘ **Question and Answer I**—Moderated by James M. Paul
- ⌘ **Practice Examples**—Jacquelyn Gamino and James Lowry
- ⌘ **Question and Answer II and Conclusion**—Moderated by James M. Paul

Supporting Inclusive Schools for the Success of Each Child

- ⌘ We, in partnership with the National Collaborative on Inclusive Principal Leadership (NCIPL), CEEDAR Center, and Oak Foundation believe inclusive principal leaders are vital to supporting students with disabilities and other diverse learners
- ⌘ Together, we released *Supporting Inclusive Schools for the Success of Each Child: A Guide for States on Principal Leadership* (www.ccssoinclusiveprincipalsguide.org)



Strategy 4: Promote Principal Development on Inclusive Practices

- ⌘ **Articulate a clear set of practices that advance inclusive and learner-centered leadership as guidance to augment current principal development work**
- ⌘ Provide and promote effective systems of in-service support, evaluation, and professional development for principals at the state and local levels using those practices
- ⌘ Establish incentives for principal mentoring, coaching and induction programs to include a deliberate focus on supporting the skills leaders need to establish optimal inclusive learning environments
- ⌘ **Ensure that all leaders are knowledgeable of evidence-based and high-leverage practices teachers need to advance positive outcomes for students with disabilities**
- ⌘ **Consider developing and using micro-credentials to ensure principals pursue professional development opportunities that hone their skills to support students with disabilities**

Research and Work of BrainFutures

BRAIN FUTURES

Translating Science to Advance Human Potential



BRAIN FUTURES



Where We Focus

Maximizing human potential across four areas



Youth



Working Adults



**Mental Health
and Addiction**



Older Adults

Our Approach

Research and Analyze

Establish consensus standards to guide utilization of brain-focused applications in targeted segments of society

Identify scientifically-validated interventions that meet these standards

Issue policy recommendations based upon our research and analysis

Organize and Advocate

Build coalitions and catalyze cross-disciplinary collaboration and action to advance adoption and access

Disseminate knowledge to core audiences and the public across multiple platforms

The BrainFutures Issue Brief and Advocacy Initiative

BRAINFUTURES

Brain Fitness and Executive Function

Evidence-Based Interventions
that Improve Student Outcomes



- Aggregated research on EF programs
- A transparent evidence-based threshold for evaluating EF programs
- A comparison guide to school-based EF programs
- Models for Action

What is Executive Function?

The ability to learn depends on Executive Function (EF) skills: a group of thinking or cognitive abilities essential for managing information and managing oneself

Self-Control

Flexibility



Memory

Focus

EF Skills in Kindergarten and First Grade Predict Math and Reading Achievement in Elementary School

Decades of research shows that executive functioning is a more powerful predictor than IQ of school readiness and academic achievement

1. Blair C., Razza R. Child Dev 2007; 78:647–63
2. Eigsti I., et al. Psychol Sci 2006; 17:478–84
3. McClelland M., et al. Dev Psychol 2007; 43:947–59
4. Bull R., Scerif G. Dev Neuropsychol 2001; 19:273–93
5. Nevo E., Breznitz Z. J Exp Child Psychol 2011; 109:73–90
6. Alloway T., et al. Child Dev 2006; 77(6):1698–716
7. Alloway T., et al. Child Dev 2009; 80:606–21

EF Brain Fitness Interventions Strengthen Emotional Mastery and Fortify Learning¹

- **Social and Emotional Learning (SEL).** EF skills are foundational to both academic and SEL competencies
- **Emotional and Mental Grit.** EF skills promote traits associated with inner resilience, such as optimism, gratitude, social and self-awareness, and goal perseverance
- **Self-Regulation.** Brain fitness interventions can train brain states for optimal learning, lowering stress and reinforcing EF and social and emotional skills
- **Lifelong Success.** EF (and SEL) skills are associated with long-term academic success and positive life outcomes and well-being



Schools Are Often Hamstrung By Low EF Challenges²

Children with low EF...



- Are more likely to repeat a grade
- Receive more disciplinary actions
- Are 8x more likely to drop out of high school before graduating

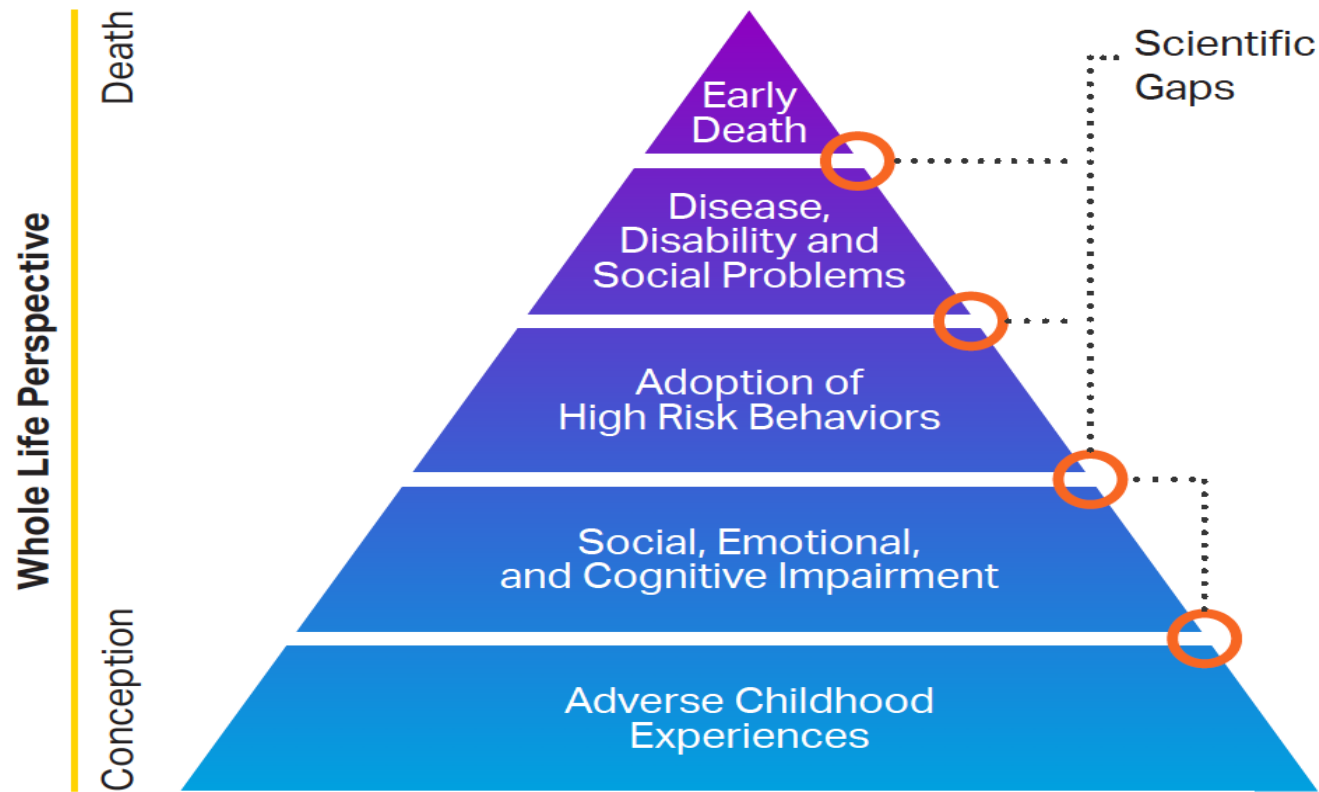


The Mental Health of our Nation's Youth Also Faces Serious Challenges

- Adverse childhood experiences (ACEs) affect almost half of U.S. children³
- One in six U.S. children aged 6-17 experiences a mental health disorder each year⁴
- 52% rise in adolescent major depressive episodes from 2005 to 2017⁵
- \$247 billion is spent each year in U.S. on childhood mental disorders⁶



Adverse Childhood Experiences Pyramid



Source: U.S. Department of Health & Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA) ("About the CDC-Kaiser ACE Study |Violence Prevention |Injury Center | CDC," 2019)

The Opportunity



- New evidence-based programs harness the brain's neuroplastic potential to produce activity-dependent enhancement of the neurocognitive systems that support executive function and learning
- “School-lunch” programs for the brain

You can't pour water into a bottle when the lid is closed

Trying to pour more subject content into a child's brain before removing "the lid," is wasting time and money.



"I am expected to meet all of these academic milestones with students who cannot sit still, are unable to listen, and forget what I taught them 5 minutes ago."

**-Mariah N.
Los Angeles School Teacher**

Executive Function Skills

Open the Lid on Learning

EF skills undergird learning so subject content can be retained

Cognitive training, mindfulness meditation, and EF curriculums have proven to improve executive function



Fundamental EF Skills:

- Focus
- Self-control
- Memory
- Cognitive Flexibility

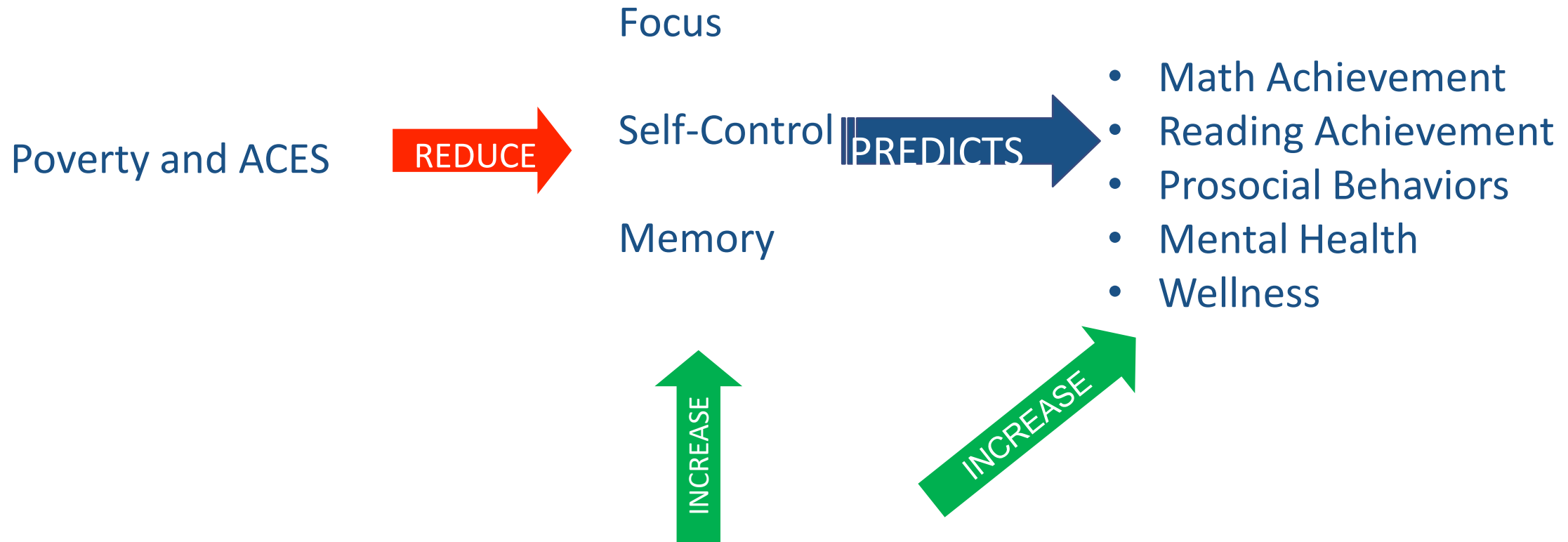
EF Can Help Level the Playing Field

"Children with poorer EFs benefit more from training; hence, training might provide them an opportunity to 'catch up' with their peers and not be left behind."⁷

– Dr. Adel Diamond
Developmental Cognitive Neuroscientist



Improve Executive Function and Children will Learn More



**Neuroscience-Informed and Evidence-Based
Programs Can Improve Executive Function**

The Issue Brief and Program Guide



- More than 40 programs were evaluated
- 10 met our evidence-based standard
- 19 others showed strong promise

Identifying Programs | Finding Those That Met the Criteria



- Can be used by students in at least one grade from K-12
- Can be implemented as a classroom-based intervention
- Has been used by “typically developing” students (i.e., not solely for those with ADHD and/or learning disabilities)
- Has research available that studies the specific program, not simply general research about the benefits of the type of intervention

Inclusion Threshold | Applying an Evidence-Based Standard

APPROACH	INTERVENTION	ONE RCT OR QUASI-EXPERIMENTAL STUDY IN A PEER-REVIEWED JOURNAL W/10+ SAMPLE SIZE	CLASSROOM-BASED IMPLEMENTATION IN AT LEAST ONE STUDY	EXECUTIVE FUNCTION OUTCOMES IN AT LEAST ONE STUDY	"TYPICALLY DEVELOPING" STUDENTS IN AT LEAST ONE STUDY
CT	ACTIVATE	X	X	X	X
CT	Arrowsmith Program		X	X	X
CT	BrainWare Safari		X	X	X
CT	Captain's Log MindPower Builder	X	X	X	
CT	CogMed	X	X	X	X
CT	SMART	X	X	X	X
SSCCT	Edubox online tutor		X	X	X
SSCCT	Fast ForWord	X	X	X	X
SSCCT	Path to Reading	X	X	X	X
SSCCT	TNT Reading	X		X	
EFC	Tools of the Mind	X	X	X	X
EFC	Rush NeuroBehavioral Center EF Curriculum		X	X	X
M	Calmer Choice		X	X	X
M	Holistic Life Foundation's Stress Reduction and Mindfulness Curriculum	X	X		X

Scope

- K-12 classroom program
- Used by all students in a class

Research & Implementation

- One randomized control trial (RCT) or quasi-experimental study in a peer-reviewed journal with 10+ sample size
- Classroom-based implementation in at least one study
- Executive Function outcomes in at least one study
- Typically developing students in at least one study



Categories Clarified | Executive Function Programs



EF-Specific Training

- Cognitive Training
- EF Curriculum
- Subject-Specific Comprehension with Cognitive Training



Mindfulness: Awareness of thoughts, feelings, senses without judgment

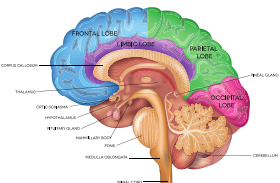


Neurofeedback: Feedback about brain activity in a skill-building context



Social Emotional Learning: Practices to understand and manage emotions, achieve positive goals, experience empathy, establish positive relationships, and make responsible decisions

ANATOMY OF THE BRAIN



Brain Literacy: Learning about the different parts, what they are called, how they function, and how they work together to create ideal conditions for learning

Consistent Format | A Way to Compare Programs

AT A GLANCE

GRADES:

K–8

TYPE:

Cognitive Training

METHOD:

Autonomous-use, Teacher-assisted

STUDIES:

RCT, Review

PROGRAM FREQUENCY:

20 minutes of cognitive training/day, two days/week for 10 weeks for a minimum of 10 hours, plus 5 minutes exercise breaks two times/day

PLATFORM/TECHNOLOGY:

Online and teacher-directed physical exercise

TECHNOLOGY REQUIRED:

One computer or laptop for each educator with internet access, projector for computer-based slides and audio speakers

TRAINING REQUIRED:

Yes, 3-hour on-site teacher training and 1-hour online follow-up

- At A Glance
- Program Description Template
- Key Studies Summary
- Other Research Available
- Find Out More

Highlights | Outcomes Of Profiled Programs

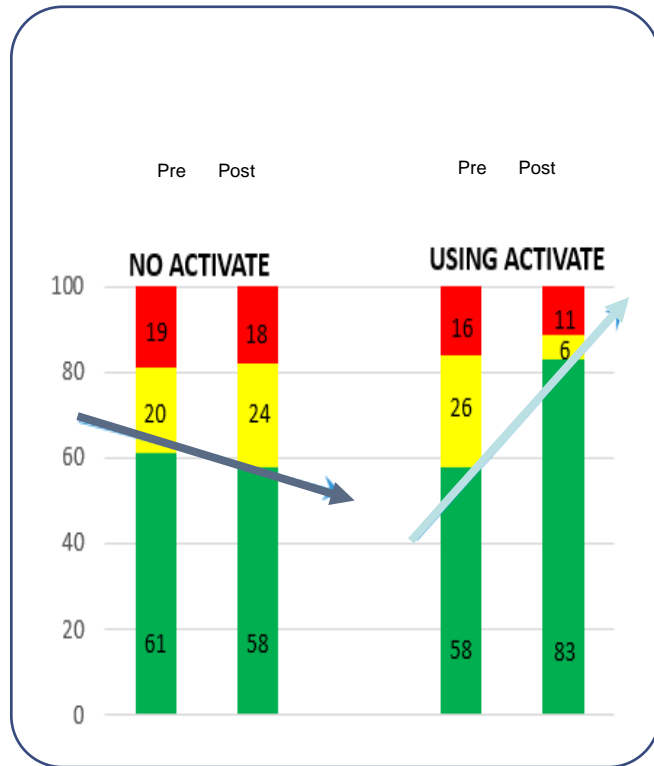


- Increases in % of students meeting proficiency on state-mandated tests for math and reading
- Reductions in disruptive classroom behavior
- Increases in prosocial behavior toward self and others
- Statistically significant improvements on:
 - NIH-recommended executive function tests
 - School-administered tests of core subjects

ACTIVATE™ Outcomes:

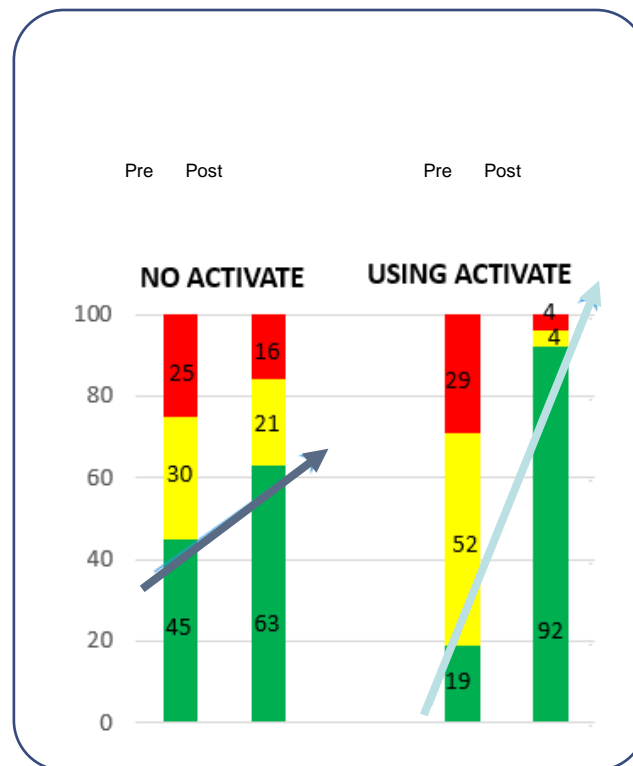
20 min/day, 3/wk x 4 months Improves Math and Reading Scores⁸

83% proficient vs. 58%



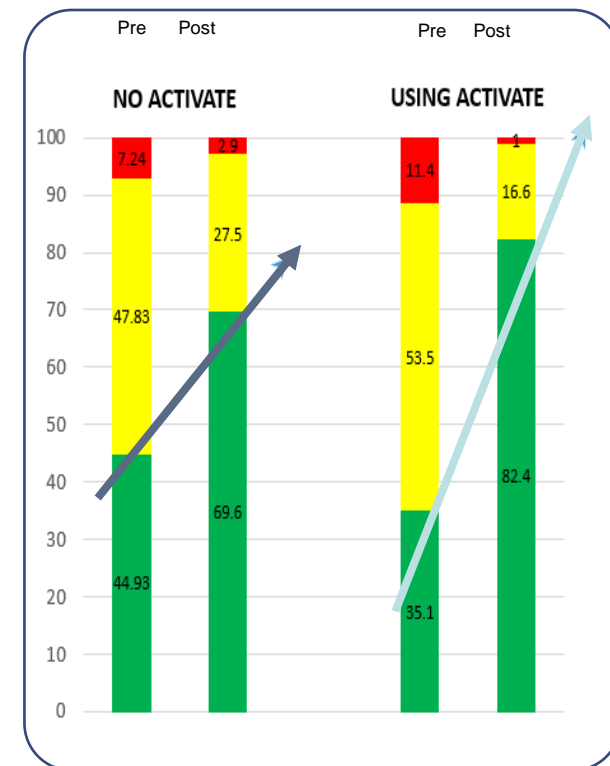
Pearson Reading Assessment
Activate Class: Grade 3, 95% free/reduced lunch

92% proficient vs. 63%



Pearson Math Assessment
Activate Class: Grade 1, 49% free/reduced lunch

82% proficient vs. 69%



District Math Assessment
Activate Class: Grade 2 <10% free/reduced lunch

MindUP Outcomes:

Practice in PreK and Kindergarten; 15 instructional lessons and deep breathing exercises 2-3/day x 60 seconds⁹

Early Reading Assessment at end of kindergarten:
MindUP group had higher scores (209 vs. 201, $p < .01$)

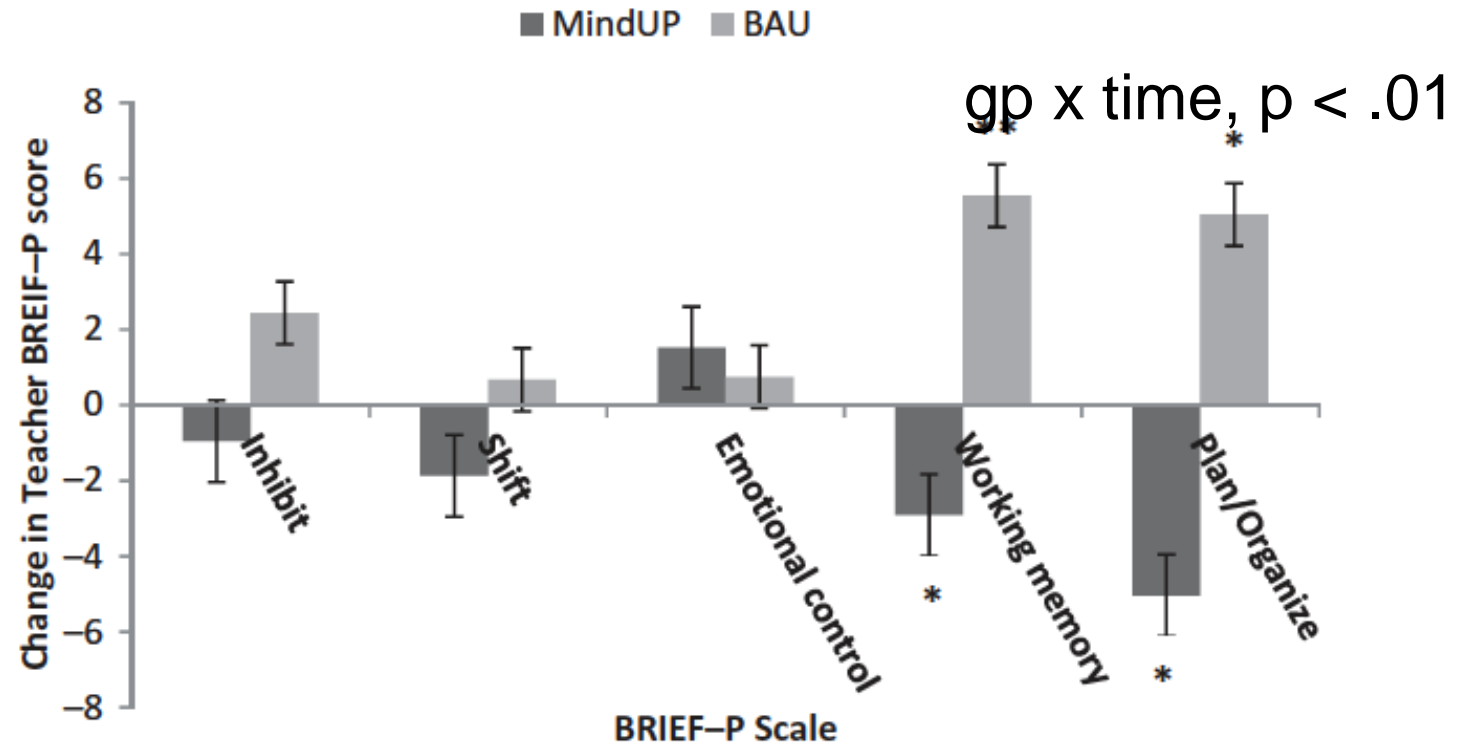


Figure 1. Change in teacher BRIEF-P scale scores (pre- to posttest) for MindUP and BAU groups (negative change scores = improved executive functions). BRIEF-P = Behavior Rating Inventory of Executive Function for Preschoolers; BAU = business as usual.

School Implementation Strategies Are Included

- Leadership and Accountability (including Assessment)
- Advance Planning
- High-Quality Implementation
- Investment in Champions
- Funding Considerations
- Additional Adoption Tips

Discussion, Reflection and Moving Forward

Discussion and Reflection

- ⌘ What questions or comments do you have for Holly?
- ⌘ What additional questions did the presentations spark for you?

Moving Forward

- ⌘ How could the work and resources Holly shared be applied in your context?
- ⌘ Do you have resources or work underway that aligns to Holly's presentations that could help peers?

The University of Texas at Dallas Center for BrainHealth & Brain Performance Institute



Jacquelyn Gamino, Ph.D.

James Lowry, M.A.



**THE UNIVERSITY OF TEXAS AT
DALLAS**

Celebrating 50 years of transformative higher education.



UT Dallas' Center for BrainHealth Strategic Memory Advanced Reasoning Training Program



Translating brain science into usable applications to improve cognitive function across the lifespan



CENTER *for*
BRAINHEALTH®
BRAIN PERFORMANCE INSTITUTE

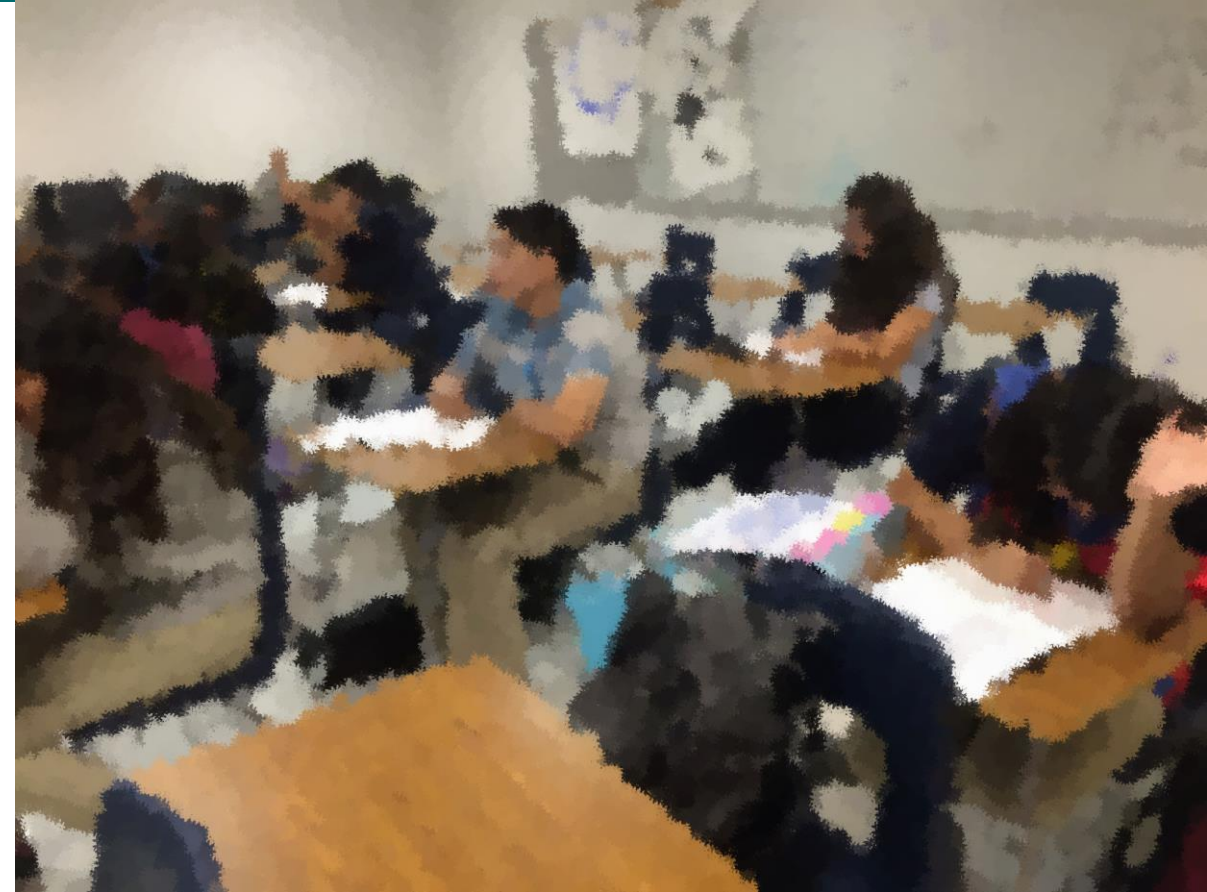


**THE UNIVERSITY OF TEXAS AT
DALLAS**

Celebrating 50 years of transformative higher education.

UT Dallas' Center for BrainHealth Strategic Memory Advanced Reasoning Training Program

- ⌘ To date more than 82,000 students have received SMART in six states
- ⌘ Focus on high-level executive function
- ⌘ Essential thinking skills for academic, career and military success



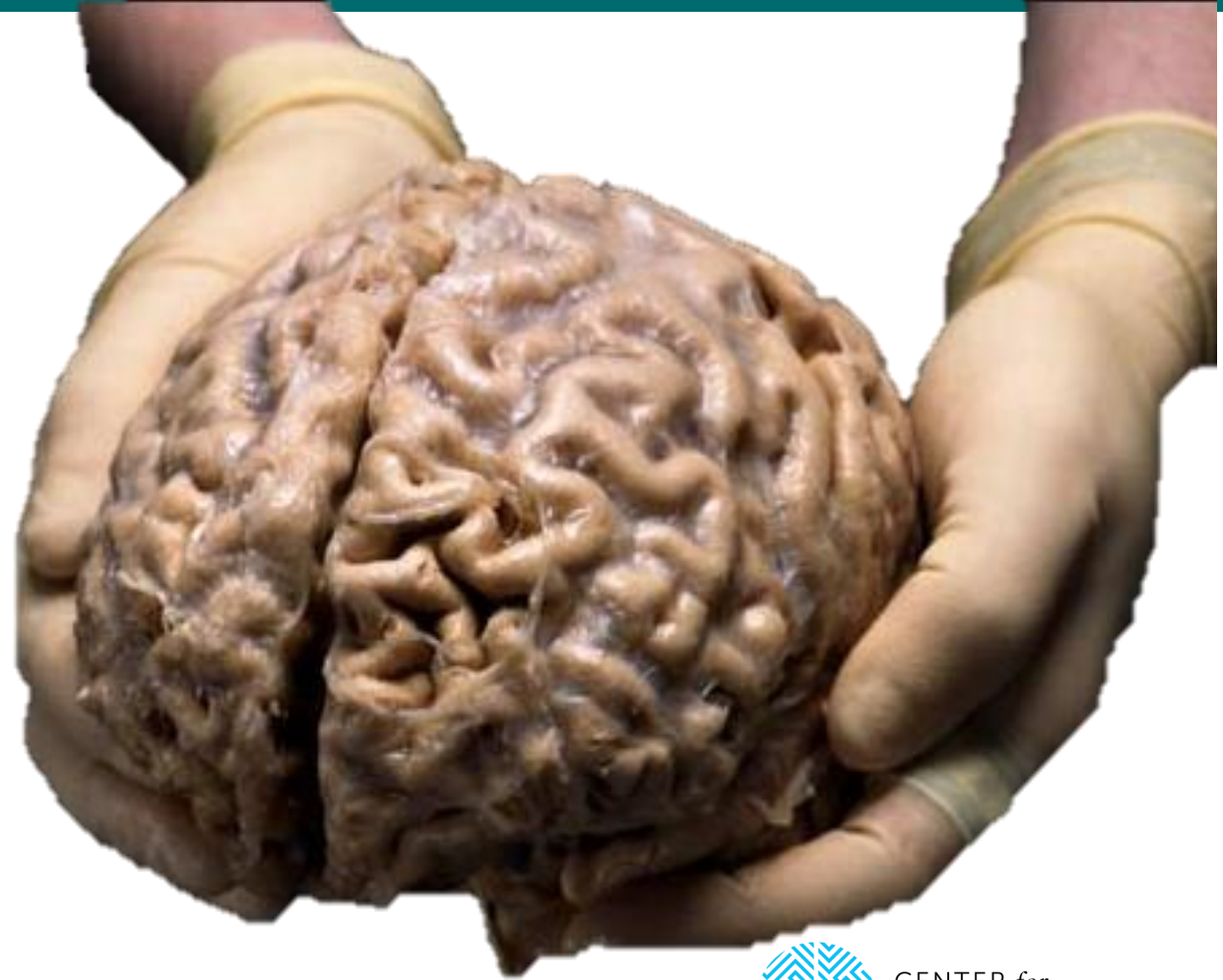
Higher-order executive function

- Complex problem solving
- Novel thinking
- Emotional regulation
- Judgment & decision making
- Cognitive flexibility



Strategic Memory Advanced Reasoning Training

- ⌘ Take advantage of brain plasticity
- ⌘ Empower students to harness their unique brain capacity
- ⌘ Empower teachers to develop and improve their personal brain function



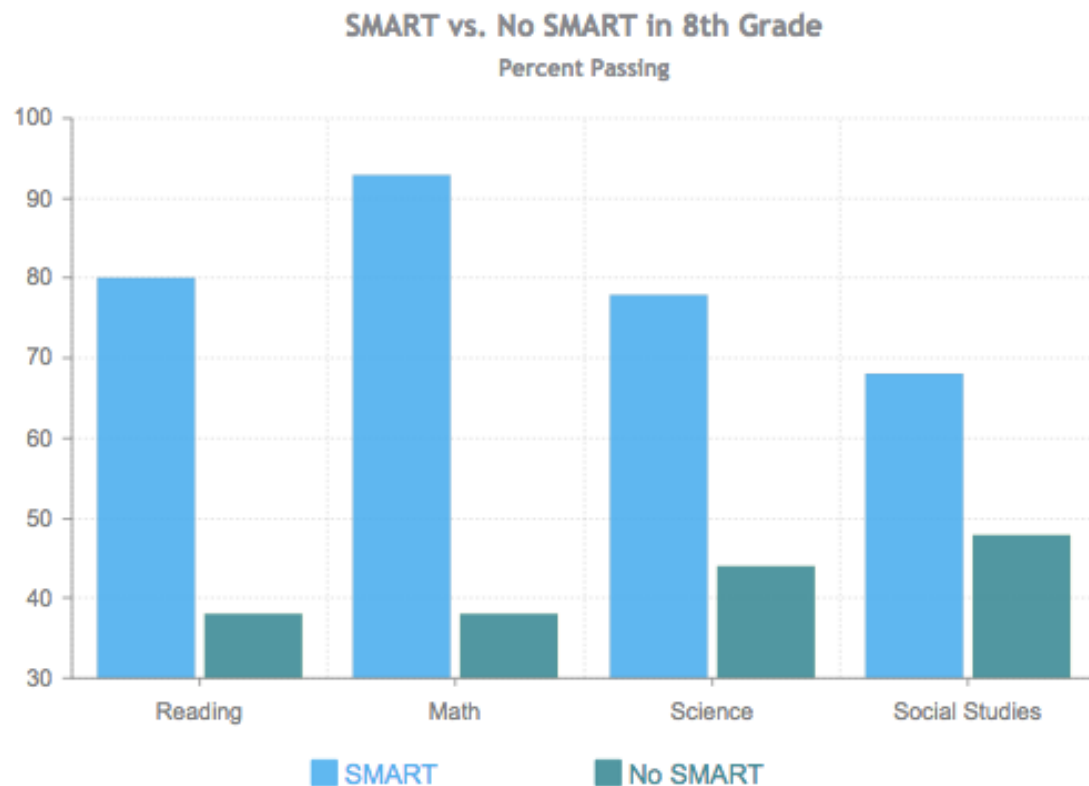
Strategic Memory Advanced Reasoning Training

⌘ Goals of the SMART program

- Teach students **how** to learn, not **what** to learn
- Take advantage of the enormous brain development occurring in middle and high school years
- Development = Greater plasticity
- Focus on cognitive development of higher order thinking



Standardized Test Results



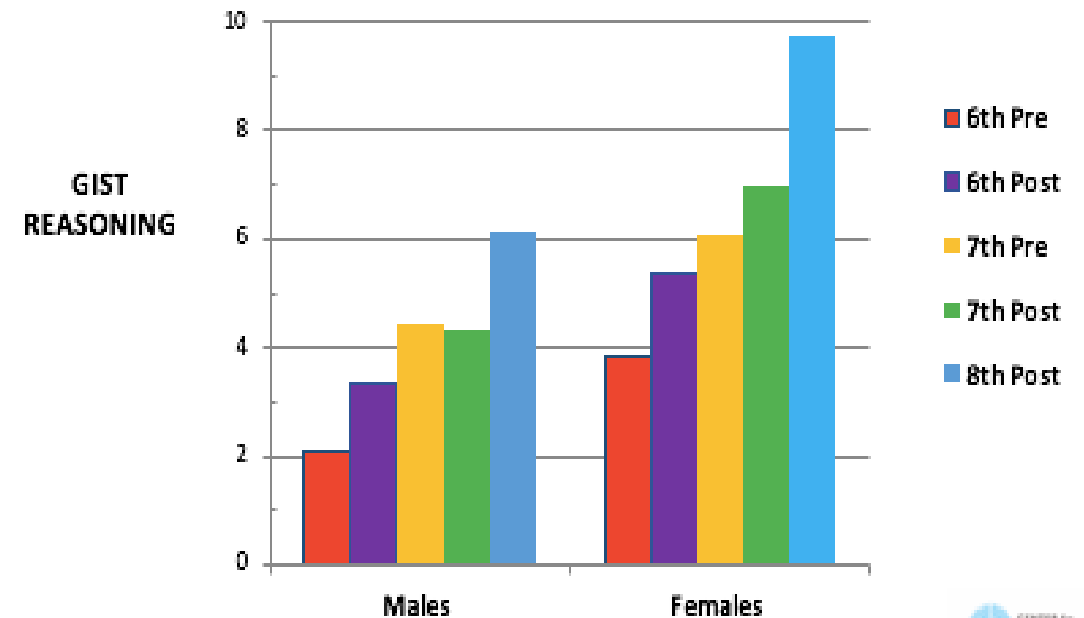
- Significant student progress in all tested content areas
- Improved executive function reflected in academic, social, emotional, and eventually work environments

Teacher Training

- ⌘ Five-day intensive teacher training as well as in-classroom coaching
- ⌘ Teachers commit to train students in all classes
- ⌘ Stand-alone curriculum taught during regular class periods
- ⌘ Teachers have access to additional materials via the secure SMART website
- ⌘ Additional assistance for enhancing thinking skills with typical curriculum

Longitudinal Data from Rural School 2015-2018

Students who Received the Program for Three Years



What is SMART ?

- ❖ Stairstep approach to enhance complex executive function
- ❖ Fosters critical thinking using principles from the science of learning
- ❖ Emphasis on the role of asking questions to analyze, interpret, and abstract meanings



Implementing SMART in the Classroom



Implementing SMART in the Classroom

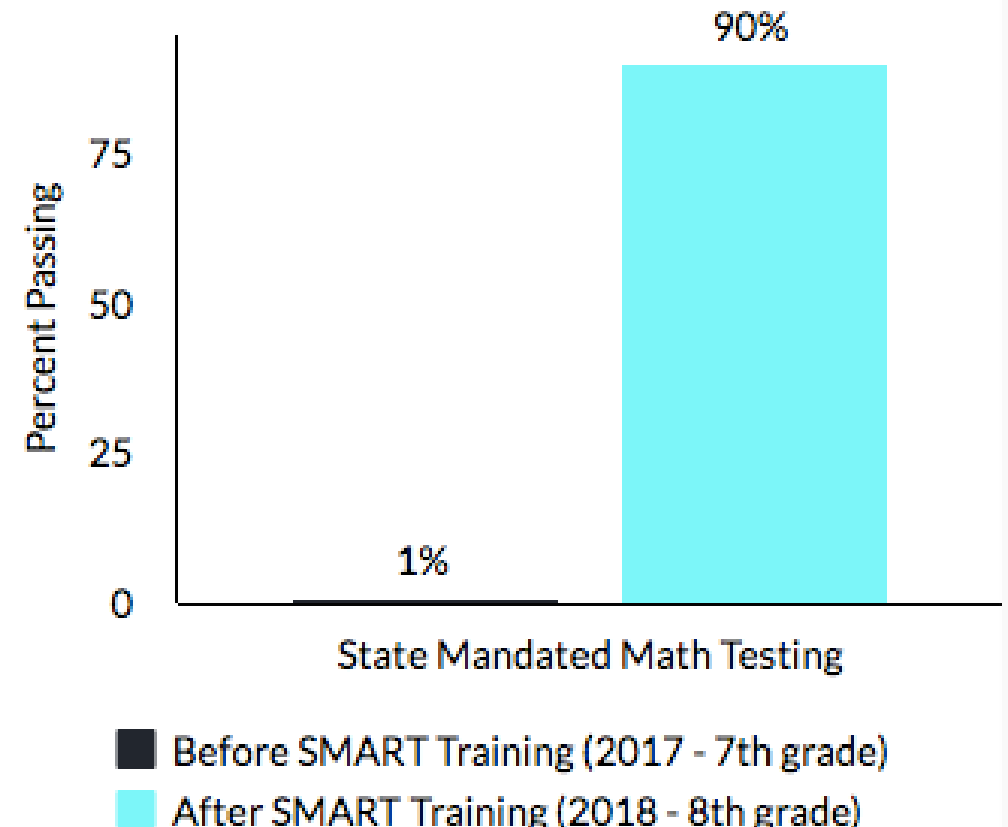
- ⌘ 10 sessions over a 4-week period
- ⌘ Pre and post assessments to assess thinking skill improvement
- ⌘ Teacher guided
- ⌘ Student engagement is key



Student Results

- ⌘ Historical Math Passing Rates of Cohort
- ⌘ Standardized Test Results

Percent of Students Passing Math Before and After SMART



TheBrainHealthProject.org



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The BrainHealth Project

How far and fast can the average healthy brain be transformed into a more fit and robust version of itself, with marked, life improvements in productivity, decision-making, problem-solving, creativity, achievement and well-being? This is our challenge.

Pilot Phase Underway

A pilot is currently being conducted through July 2020 in the Dallas-Ft. Worth area. Enrollment is now closed, but please sign up to receive updates – so you can be among the first to sign on when The BrainHealth Project™ launches nationwide later this year!

RECEIVE UPDATES

The SMART for Educators Team

- ⌘ Doris Boat
- ⌘ Ellen Brady
- ⌘ Courtney Frost
- ⌘ Brittanie Gray
- ⌘ Eddie Hamilton
- ⌘ James Lowry
- ⌘ Cuwonna Peoples
- ⌘ Denice Myers
- ⌘ Russ Riddle
- ⌘ Jeanne Rintelmann
- ⌘ Barbara Robinson
- ⌘ Erin Rohde
- ⌘ Dana Sisco
- ⌘ Janet Washington



Discussion, Reflection and Moving Forward, Part II

Discussion and Reflection

- ⌘ What questions or comments do you have for Jacquelyn and James?
- ⌘ What additional questions did the presentations spark for you?

Moving Forward

- ⌘ How could the work and resources Jacquelyn and James shared be applied in your context?
- ⌘ Do you have resources or work underway that aligns to Jacquelyn and James' presentations that could help peers?

Conclusion

Thank you for joining us. Please reach out to James M. Paul at james.paul@ccsso.org with any questions about the webisode series. Please join us for upcoming webisodes.

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Endnotes

¹McCormack, H. O'Brien, C., Kennedy, P., Harbin, H., Carneal, J., & Alfred, L. (2015). Promoting Brain Health and Brain Fitness: A National Call for Action. Retrieved from https://chp-wp-uploads.s3.amazonaws.com/www.thekennedyforum.org/uploads/2017/06/issue-brief-Brain_Fitness_160725.pdf

²Pingault JB, Tremblay E, Vitaro F, Carbonneau R, Genolini C, Falissard B, and Côté SM. (2011) Childhood Trajectories of Inattention and Hyperactivity and Prediction of Educational Attainment in Early Adulthood: A 16-Year Longitudinal Population-Based Study. *The American Journal of Psychiatry*; 168:1164–70

³ Sacks, V and Murphy D - Child Trend. (Updated February 2018). The prevalence of adverse childhood experiences, nationally, by state, and by race or ethnicity. Retrieved from <https://www.childtrends.org/publications/prevalence-adverse-childhood-experiences-nationally-state-race-ethnicity>

⁴National Alliance on Mental Illness. Mental Health By The Numbers. Retrieved March 9, 2020 from <https://www.nami.org/learn-more/mental-health-by-the-numbers>

⁵American Psychological Association. (2019, March 15). Mental health issues increased significantly in young adults over last decade: Shift may be due in part to rise of digital media, study suggests. *ScienceDaily*. Retrieved March 9, 2020 from www.sciencedaily.com/releases/2019/03/190315110908.htm

⁶National Research Council (US) and Institute of Medicine (US) Committee on the Prevention of Mental Disorders and Substance Abuse Among Children, Youth, and Young Adults: Research Advances and Promising Interventions; O'Connell ME, Boat T, Warner KE, editors. Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities. Washington (DC): National Academies Press (US); 2009.

⁷Diamond A. (2012). Activities and Programs That Improve Children's Executive Functions. *Current directions in psychological science*, 21(5), 335–341. <https://doi.org/10.1177/0963721412453722>

⁸Wexler B, Iseli M, Leon S. et al. (2016). Cognitive Priming and Cognitive Training: Immediate and Far Transfer to Academic Skills in Children. *Nature Scientific Reports*; 6:32859; doi: 10.1038/srep32859 . Available at www.nature.com/articles/srep32859

⁹Thierry, K., Bryant, H., Nobles, S., & Norris, K. (2016). Two-Year Impact of a Mindfulness-Based Program on Preschoolers' Self-Regulation and Academic Performance. *Early Education and Development*, 27(6), 805-821. doi: 10.1080/10409289.2016.1141616. <http://dx.doi.org/10.1080/10409289.2016.1141616>