

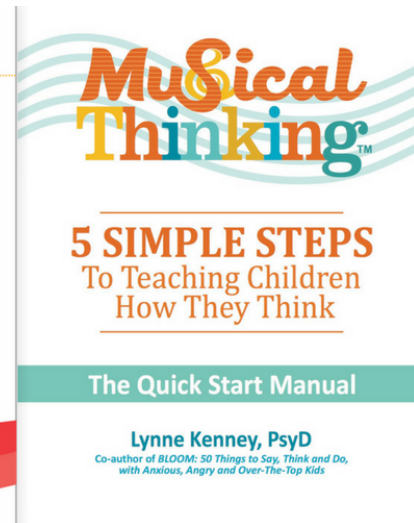
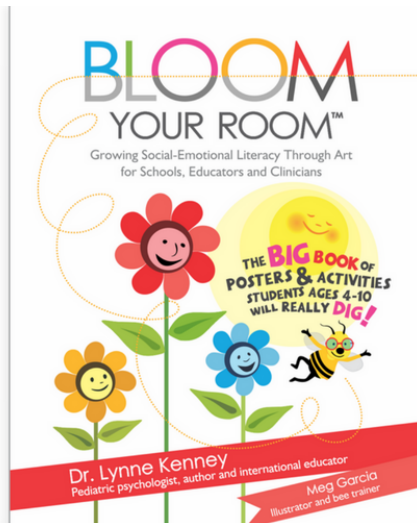
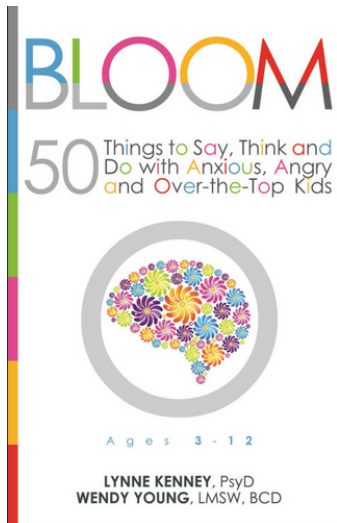


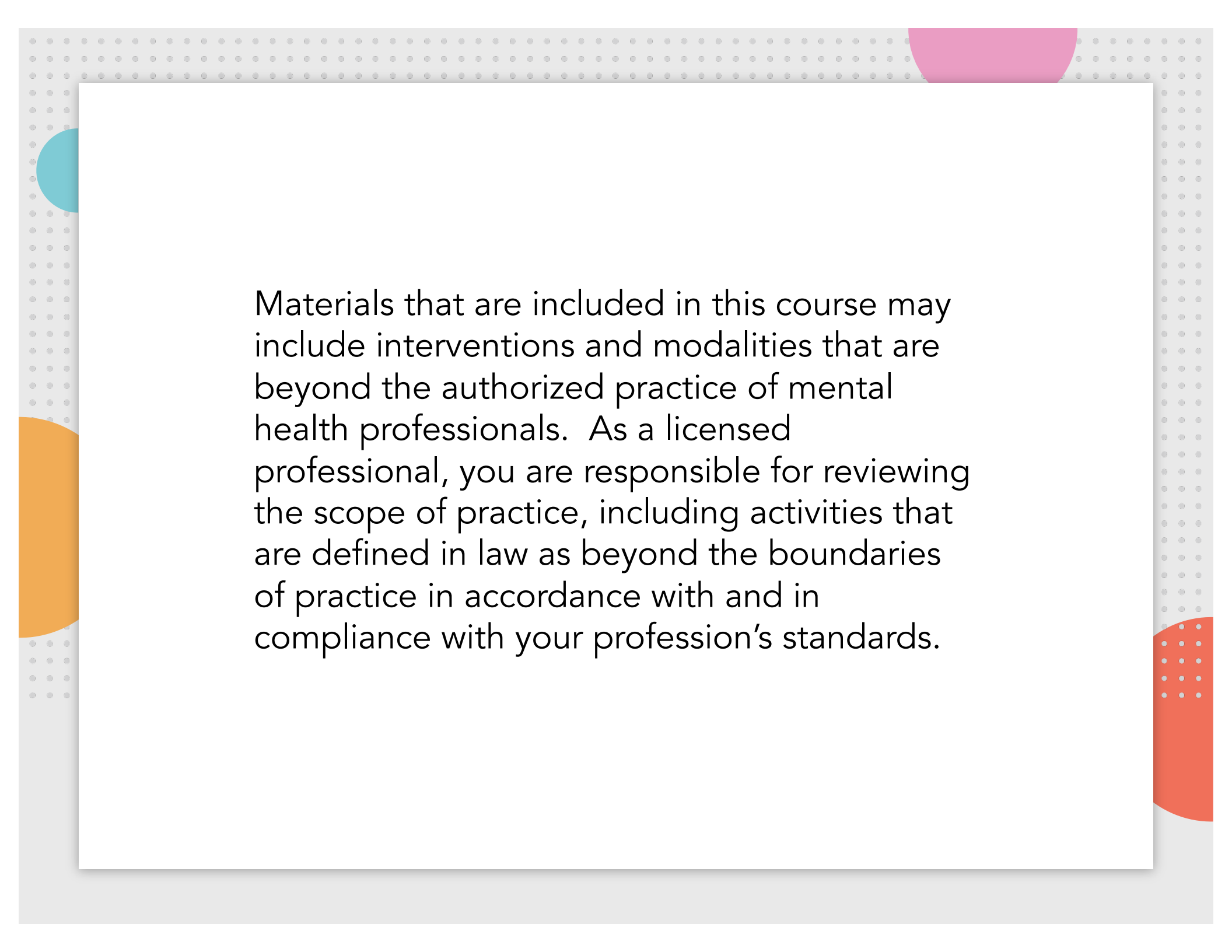
# Executive Function in the Classroom

**30 Proven and Effective  
Self-Regulation and  
Executive Function  
Strategies  
For Children with Sensory  
Disorders, Learning  
Disabilities, Anxiety and  
ADHD**

Lynne Kenney, PsyD  
[www.lynnekenney.com](http://www.lynnekenney.com)  
@drlynnekenney







Materials that are included in this course may include interventions and modalities that are beyond the authorized practice of mental health professionals. As a licensed professional, you are responsible for reviewing the scope of practice, including activities that are defined in law as beyond the boundaries of practice in accordance with and in compliance with your profession's standards.

## Coaching Executive Functions



### Build Executive Functions

Self-control, attention, memory, cognitive flexibility, previewing, planning, organization, self-regulation

## Cognitive-Physical Activities

CogniTap Desk Moves: Set 4

### Tap & Claps

Tap Clap Tap Clap Tap Clap Tap Clap  
R L L R R L L R

Tap Clap Tap Clap Tap Clap Tap Clap  
L R R L L R R L

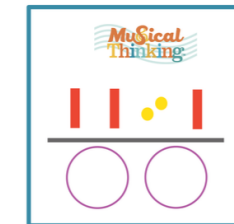
1 § 2 § 3 § 4 §

Clap Tap Tap Clap Tap Tap Clap Clap  
R L L R L L R

Clap Tap Tap Clap Tap Tap Clap Clap  
R L L R L L R

1 § 2 § 3 § 4 §

Sequential



### Teach Self-Regulation Skills

Spotlight, Think-Ups, Calm Me Downs, CogniTap, Bouncing Balls, Bean Bags, Musical Thinking

O  
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B  
J  
E  
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S

- Learn the biological precursors to executive functions and learning
- Learn how coordinated rhythmic beat-based motor movement engages executive function
- Practice strategies to help children move out of the stress response into an alert state of calm
- Experience proven cognitive-motor activities to enhance thinking and self-regulation
- Improve how children learn by teaching them how their brains work
- Close the education gap in poverty with movement and cognition



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- Implement research-based activities educators, teachers and clinicians can use to improve thinking, self-regulation, learning and behaviour.
- Learn the relationship between cognition and motor movement.
- Explore bringing physical activity to the classroom, clinic and home with coordinative cognitive-motor activities.
- Practice over 30 activities you can do to help children with ADHD, dyslexia, ODD, sensory processing challenges, dyspraxia, anxiety and behavioural issues.
- Learn how to enhance collaboration and cooperation in your classroom by teaching children applied neuroscience

# THE KINETIC CLASSROOM PART I

The "Ready To Learn"  
Brain

Building a  
Prosocial Brain

Engaging Subcortical  
Structures

Musical Thinking

Building Your Own  
Cognitive-Motor Patterns  
Sequences & Phrases

Cognitive Neuroscience

# THE KINETIC CLASSROOM PART II

The "Cognitive Conversation" about Attention

CogniTap + Spots for Alerting & Regulating

Music, Drumming and Sound for Cognitive Engagement

Refining Your Tool Box of Cognitive-Movement Sequences + Coaching Strategies for Your Setting





# THE KINETIC CLASSROOM PART III

Language, Dyslexia,  
Reading & Learning

Beanbags and Balls  
For Alerting and Calming

The "Cognitive  
Conversation" about  
Working Memory

Self-Regulation, Response  
Inhibition, Self-Control and  
Emotional Modulation

Spotlight to original  
Cognitive-Visual Motor  
Language

Rhythm Ball and  
Heavy Work



How have our fields  
grown and changed in  
the past 10 years?

# Advancements in Technology Neuroscience

Then...

Alexander  
Luria

Now...

fMRI  
Diffusion Tensor  
Imaging  
Deep Brain  
Stimulation

# COGNITIVE DOMAINS

- Self-Control
- Response Inhibition
- Self-Regulation
- Learning to move, speak, respond & think slowly with intention

S

- Attention
- The Attention Cycle
- My Attention Engine

A

- Memory Working
- Short-term
- Long-term
- Visual Working Memory
- Auditory Working Memory
- Encoding & Retrieval

M

- Cognitive flexibility
- Coping with perceived loss
- Adapting to new circumstances
- Cognitive shift

C

# MOTOR DOMAINS

- Balance

B

- Weight Shift

W

- Rhythm

R

- Tempo
- Timing

T

The image features a central white rectangular area containing three overlapping circles. The circles are arranged horizontally, with the middle one overlapping the other two. The circles are shaded in two tones of purple: a lighter lavender and a darker, more saturated purple. The overlapping areas create darker shades of purple. This central graphic is set against a light grey background with a fine, repeating dot pattern. A horizontal grey band with a slight gradient is positioned across the middle of the image, partially overlapping the circles and the white area. The text 'FOCUS ON THE BEAT' is centered within this band in a white, uppercase, sans-serif font. On the left and right sides of the image, there are vertical grey bars with the same dot pattern. Small, semi-circular decorative elements in teal, pink, orange, and red are placed at the corners where these bars meet the white area.

FOCUS ON THE BEAT

# THE KINETIC CLASSROOM PART I

The "Ready To Learn"  
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THE “READY TO LEARN”  
BRAIN





What does “Ready to Learn” mean to you?



Vestibular  
Proprioceptive  
Kinesthetic  
Auditory  
Visual



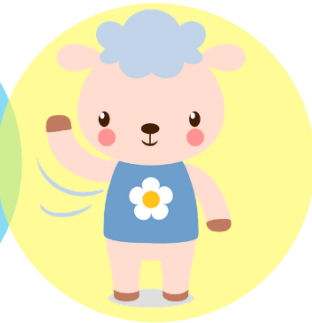
Motor Tempo,  
Rhythm &  
Timing



Self-  
Regulation



Executive  
Functions



Learning &  
Behavior

Achievement



Executive Functions are Precursors to  
Achievement

100's of  
Millions of  
Dollars Spent  
Annually on  
Curriculum  
Content &  
EdTech

## EXECUTIVE SKILLS OPEN THE LID

"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



Focus  
Self-control  
Memory

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

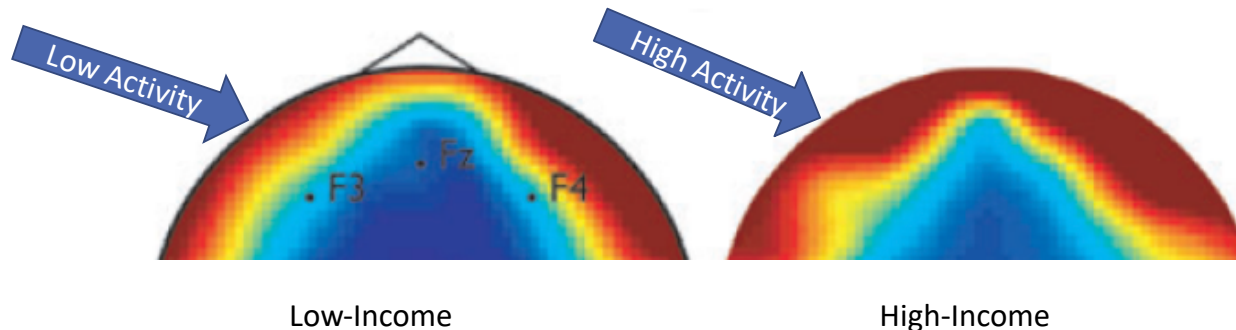
Bruce Wexler, MD Yale School of Medicine

## As early as **9 Months** of Age, Children in Low Income Families Have Lower Activity in the EF Areas of the Brain

Frontal Lobe Activity is related to Attention and Language at 16-18 months.



Frontal Lobe Activity at 16-18 months Predicts Language at 4-5 years.



P Tomalski et al *Developmental Science* 16:676-687 2013

Bruce Wexler, MD Yale School of Medicine

# Cost of Low Executive Function

50% more likely to Repeat a Grade

57% Receive More Disciplinary Actions

50% more Money to Educate

2x More Teacher Time

8 x more likely to drop out of high school

# Adverse Childhood Experiences

Traumatic events that can have negative, lasting effects on health and wellbeing



People with 6+ ACEs can die

**20 yrs**

earlier than those who have none



1/8 of the population have more than 4 ACEs



www.70-30.org.uk  
@7030Campaign

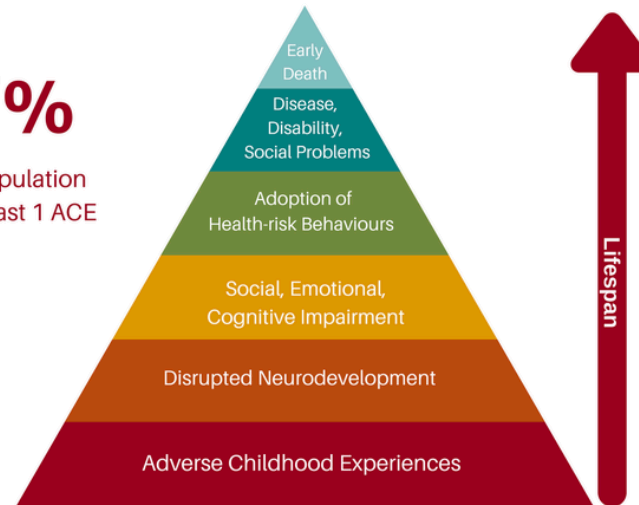
## 4 or more ACEs

- 3x the levels of lung disease and adult smoking
- 11x the level of intravenous drug abuse
- 14x the number of suicide attempts
- 4x as likely to have begun intercourse by age 15
- 4.5x more likely to develop depression
- 2x the level of liver disease

“ Adverse childhood experiences are the single greatest unaddressed public health threat facing our nation today ”

Dr. Robert Block, the former President of the American Academy of Pediatrics

**67%**  
of the population have at least 1 ACE



# Research Study Design

There are four main types of Quantitative research: Descriptive, Correlational, Causal-Comparative/Quasi-Experimental, and Experimental Research.

Randomized controlled trial: (RCT) A study in which people are allocated at random (by chance alone) to receive one of several clinical interventions including a control group. RCTs attempt to establish cause-effect relationships among the variables.

A cross-sectional study is descriptive. It examines the relationship between disease (or other health related state) and other variables of interest as they exist in a defined population at a single point in time or over a short period of time (e.g. calendar year).



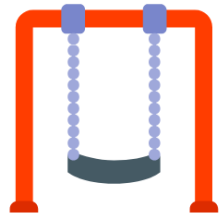


What accounts for the increase in developmental, medical and mental health disorders in the US?



## Then & Now

Play outdoors  
Play in nature  
Swing upside down from trees  
Jump into lakes  
Balance on rocks  
Go on field trips  
Watch Television  
Creative & Imaginary Play  
Dig and build  
Tunnel and crawl  
Take more physical risks  
Play more hand games,  
rhyming songs and jump rope



Less free time  
More structured and scheduled play  
Less unstructured time with family  
More isolation with digital devices  
Fewer family dinners  
Less time outdoors  
Less physical movement  
More sitting  
Less opportunities for vestibular  
and sensory activities  
2-3 fold increase in screen time  
from the 1990's to 2018



# ADHD

## THEN AND NOW

ADHD is among the most common neurodevelopmental disorders of childhood.

ADHD's worldwide prevalence in children is estimated at 5.3 percent, though figures vary. The current rate of children diagnosed with ADHD in the US is reported to be 10-11 percent, (CDC, 2019).

ADHD in childhood is more prevalent in boys than it is in girls by a 3:1 ratio. The difference attenuates by adulthood, when prevalence is about the same.

Children who begin school as the youngest in their cohort have a higher risk of being diagnosed with ADHD (Harvard, 2018).

Raising a child with attention deficit hyperactivity disorder (ADHD) costs American families an estimated \$5.8 billion every year— 5 X more than raising a child without ADHD—according to a new study by researchers at FIU's Center for Children and Families.

### Percent ever diagnosed with ADHD

Year	Overall	Ages 4-11	Ages 12-17
2015-2016	10.2	7.7	13.5
2013-2014	9.4	7.9	11.3
2011-2012	9.6	7.7	12.0
2009-2010	9.0	6.9	11.9
2007-2008	8.1	6.1	10.8
2005-2006	7.5	6.0	9.3
2003-2004	7.3	5.8	9.3
2001-2002	7.2	5.9	8.9
1999-2000	6.5	5.3	8.2
1997-1998	6.1	5.3	7.2

# Pregnancy Complications and Health Disorders have increased in the U.S.

## RATES OF PREGNANCY COMPLICATIONS

Infertility (Women)   <b>6%</b>	Low Iron/Anemia   <b>20-40%*</b>
Infertility (Men)   <b>6%*</b>	Caesarean Sections   <b>33%</b>
Inability To Carry Baby To Term   <b>11%</b>	Still Births   <b>1%</b>
Miscarriages   <b>15-20%*</b>	Low Birthweight   <b>8%</b>
Gestational Diabetes   <b>9%</b>	Pre-Term Births   <b>11%</b>
Preeclampsia   <b>2-8%*</b>	Post-Partum Depression   <b>13%*</b>

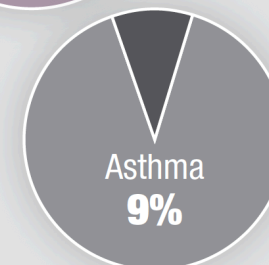
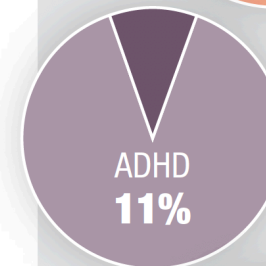
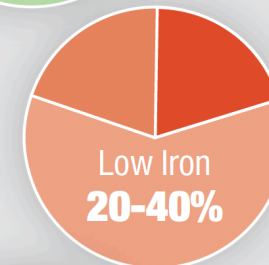
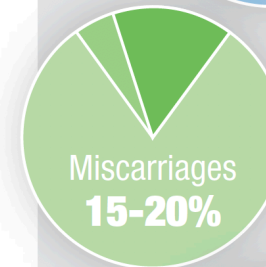
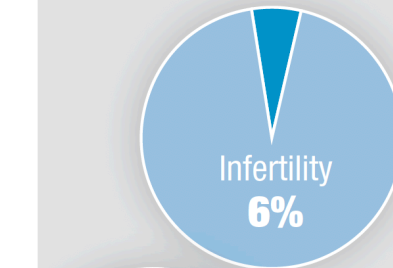
## RATES OF CHILDHOOD HEALTH DISORDERS

Autism   <b>1-2%</b>	Asthma   <b>9%</b>
Birth Defect (heart, other)   <b>3%</b>	Childhood Obesity   <b>17%</b>
ADHD   <b>11%</b>	Depression   <b>7%*</b>
Learning Disabilities   <b>8%</b>	Bipolar   <b>Rapidly rising diagnosis</b>

## SUMMARY

Pregnancy complications and childhood health disorders are very common in the U.S. The recommendations in *The Healthy Child Guide* will help you reduce those risks and improve the health and development of your child. Learn more in the following pages.

Data is from the U.S. Centers for Disease Control (CDC) [www.cdc.gov](http://www.cdc.gov) except for those marked with an asterisk which are from research articles.



Rates of depression and anxiety among young people in America have been increasing steadily for the past 50 to 70 years.

Today, by at least some estimates, five to eight times as many high school and college students meet the criteria for a diagnosis of major depression and/or anxiety disorder as was true half a century or more ago.

This increased psychopathology is not the result of changed diagnostic criteria; it holds even when the measures and criteria are constant.

## Kids are More Anxious & Depressed

Decline in Young People's Sense of Personal Control Over Their Fate (locus of control)

Shift Toward Extrinsic Goals, Away From Intrinsic Goals (grades, money, external rewards)

Decline in Free Time & Free Play

More Time Spent on Digital Media

Diminished Consumption of Clean Whole Foods & Water

More exposure to Pesticides & Toxins

Sources: Peter Gray, 2010; Neurological Health Foundation, 2018


To the extent that my emotional sense of satisfaction comes from progress toward intrinsic goals I can control my emotional wellbeing.

To the extent that my satisfaction comes from others' judgments and rewards, I have much less control over my emotional state.

PETER GRAY PH.D.  
FREEDOM TO LEARN

# C O M O R B I D I T Y

- Up to 90 percent of kids with ADHD also have executive function challenges, many of which last into adulthood, Brown, AdditudeMag.
- Dyslexia affects 15-20% of the population worldwide, IDA.
- 60% to 80% of children with ADHD or Dyslexia have a comorbid diagnosis, with 25% to 40% of children meeting the criteria for both dyslexia and ADHD.
- A meta-analysis of 175 research studies worldwide on ADHD prevalence in children aged 18 and under found an overall pooled estimate of 7.2% (Thomas et al. 2015). Thus, 7.2% of this total population is 129 million—a rough estimate of the number of children worldwide who have ADHD.
- Developmental coordination disorder (DCD) is a condition affecting 5-6% of the population, McMaster University.
- 50% of children with ADHD are also diagnosed with DCD, McMaster University.

The background features a light gray border with a white dotted pattern. In the center, three overlapping circles are arranged horizontally. The leftmost circle is light blue, the middle one is a slightly darker blue, and the rightmost one is a vibrant teal. A horizontal gray band with rounded ends is superimposed over the middle of these circles, containing the title text. Additional decorative elements include a pink semi-circle at the top right, a teal semi-circle at the top left, an orange semi-circle at the bottom left, and a red semi-circle at the bottom right, all partially overlapping the dotted border.

Learning and Achievement:  
What We Need to Know  
About The Evidence



Self-  
Regulation

Executive  
Function

Physical  
Activity

# Building Brain Literacy

- Brain Literacy is learning about brain biology and brain function to help students build metacognition and awareness of their executive function skills (Brain Futures, 2019).
- Research shows that metacognition - the ability to think about how you think - can improve learning (Bialik, 2015).
- Students with higher levels of Brain Literacy are likely more able to identify, apply, and revise cognitive skills in service of their learning and social relationships.
- When we coach students about their executive function skills we tell them "Executive Functions are Cognitive Skills and Cognitive Skills Can Be Learned."
- Improving students' brain literacy helps them to understand the relevance of cognitive interventions leading to more agency, better mastery and motivation in improving their social, cognitive and motor skills.

# The Importance EF, Self-Regulation & Social Competency for Academic Achievement

Self-regulation refers to the conscious control of thoughts, feelings, and behavior, and involves both emotional and behavioral self-regulation. McClelland et al. focus on the behavioral aspects of regulation, which stem from underlying executive function processes of attentional flexibility or shifting, working memory, and inhibitory control (Best & Miller, 2010; Garon, Bryson, & Smith, 2008; McClelland & Cameron, 2012).

Executive Functions including Self-Regulation as early as 2 years of age predicts future academic and social success (Mulder, 2017).

Preschool social-emotional competencies predict school adjustment in Grade 1, Nakamichi, 2019.

# Self-Regulation, School Readiness & Academic Achievement

Self-regulation has been established as a key mechanism associated with a variety of outcomes including **school readiness** (Blair and Razza, 2007; McClelland et al., 2007a; Morrison et al., 2010), **academic achievement** during childhood and adolescence (McClelland et al., 2006; Cameron Ponitz et al., 2009; Duckworth et al., 2010; Li-Grining et al., 2010), and **long-term health and educational outcomes** (Moffitt et al., 2011; McClelland et al., 2013).

The behavioral aspects of self-regulation maybe especially important for academic and school success (McClelland et al., 2007a; Cameron-Ponitz et al., 2009; McClelland and Cameron, 2012).