

## The Assessment of Children's Emotional, Behavioral and Developmental Challenges: Welcome to the 21st Century



**Sam Goldstein, Ph.D.**  
Assistant Clinical Professor  
University of Utah School of Medicine  
Clinical Director  
Neurology, Learning and Behavior Center

[www.samgoldstein.com](http://www.samgoldstein.com)  
[info@samgoldstein.com](mailto:info@samgoldstein.com)  
[@drsamgoldstein](https://twitter.com/drsamgoldstein)  
[@doctorsamgoldstein](https://www.facebook.com/doctorsamgoldstein)




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### Disclosure

- My expenses for this talk are supported by Multi-Health Systems.
- I have developed tests marketed by Multi-Health Systems, Pro-Ed and Western Psychological Services.
- I have authored books marketed by Springer, Wiley, Guilford, Double Day, McGraw Hill, Brookes, Kluwer and Specialty Press.
- I am Editor in Chief of the Journal of Attention Disorders (Sage) and Co-Editor of the Encyclopedia of Child Development (Springer)

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### Learning Objectives For Today




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The Future



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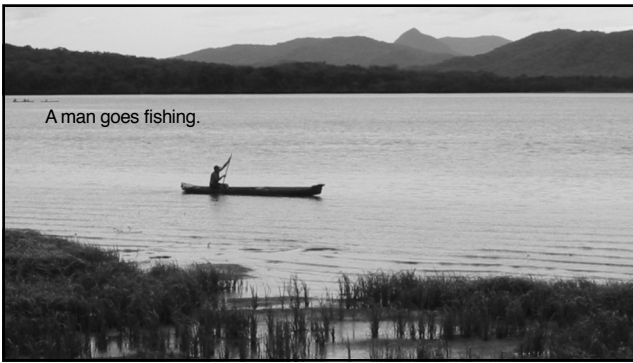
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A man goes fishing.



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Preschool Graduation Part I



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Preschool Graduation Part II



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The purpose of life is to prepare  
the next generation for their  
future.

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Caregivers are the architects of the  
way in which experience influences  
genetically preprogrammed but  
experience dependent brain  
development.

Daniel Siegel  
*The Developing Mind*



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## Survival of the Species

- Salmon and snakes are born with sufficient instincts to survive.
- Bear cubs require at least one or two years with their mother to insure survival.
- Higher primates require three or four years.
- Humans require at least ten years.




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Through the  
Eyes of  
Innocence




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We have done an a  
very good job of  
marketing the concept  
of school to young  
children.

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We have been successful  
in doing so because they  
possess Instinctual  
Optimism and Intrinsic  
Motivation.

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We have perpetuated the nineteenth  
century perception that raising children  
is a process by which information is  
dumped into a **BLACK BOX** lying  
mysteriously within the human brain.

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We have also assumed a  
Stepford Wives model that  
all black boxes are  
identical.

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### The Bus Test



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### I Had a Revelation in St. Augustine

The world operates along a normal curve!



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### Todd: Journey of a Youth with ADHD

I thought hell for a  
smart kid!

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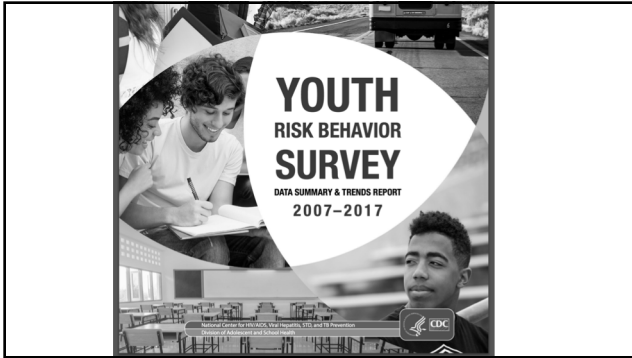
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THE PERCENTAGE OF HIGH SCHOOL STUDENTS WHO:	2007 Total	2009 Total	2011 Total	2013 Total	2015 Total	2017 Total	Trend
Were threatened or injured with a weapon at school	7.8	7.7	7.4	6.9	6.0	6.0	
Did not go to school because of safety concerns	5.5	5.0	5.9	7.1	5.6	6.7	
Were electronically bullied	NA	NA	16.2	14.8	15.5	14.9	
Were bullied at school	NA	19.9	20.1	19.6	20.2	19.0	
Were forced to have sex	7.8	7.4	8.0	7.3	6.7	7.4	
Experienced physical dating violence <sup>†</sup>	NA	NA	NA	10.3	9.6	8.0	
Experienced sexual dating violence <sup>†</sup>	NA	NA	NA	10.4	10.6	6.9	

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THE PERCENTAGE OF HIGH SCHOOL STUDENTS WHO:	2007 Total	2009 Total	2011 Total	2013 Total	2015 Total	2017 Total	Trend
Experienced persistent feelings of sadness or hopelessness	28.5	26.1	28.5	29.9	29.9	31.5	
Seriously considered attempting suicide	14.5	13.8	15.8	17.0	17.7	17.2	
Made a suicide plan	11.3	10.9	12.8	13.6	14.6	13.6	
Attempted suicide	6.9	6.3	7.8	8.0	8.6	7.4	
Were injured in a suicide attempt	2.0	1.9	2.4	2.7	2.8	2.4	

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THE PERCENTAGE OF HIGH SCHOOL STUDENTS WHO:	2007 Total	2009 Total	2011 Total	2013 Total	2015 Total	2017 Total	Trend
Ever had sex	47.8	46.0	47.4	46.8	41.2	39.5	↓
Had four or more lifetime sexual partners	14.9	13.8	15.3	15.0	11.5	9.7	↓
Were currently sexually active	35.0	34.2	33.7	34.0	30.1	28.7	↓
Used a condom during last sexual intercourse <sup>1</sup>	61.5	61.1	60.2	59.1	56.9	53.8	↓
Used effective hormonal birth control <sup>1</sup>	NA	NA	NA	25.3	26.8	29.4	↑
Used a condom and effective hormonal birth control <sup>1</sup>	NA	NA	NA	8.8	8.8	8.8	↔

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THE PERCENTAGE OF HIGH SCHOOL STUDENTS WHO:	2007 Total	2009 Total	2011 Total	2013 Total	2015 Total	2017 Total	Trend
Ever used select illicit drugs	22.6	20.0	22.5	17.3	15.4	14.0	↓
Ever injected illegal drugs	2.0	2.1	2.3	1.7	1.8	1.5	↓
Ever misused prescription opioids <sup>2</sup>	NA	NA	NA	NA	NA	14.0	NA

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We fail to appreciate that children are genetically endowed with certain patterns of behavior and thought.

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### What Are These Traits

- The drive to help
- The drive to mastery
- Intrinsic motivation
- Instinctual optimism
- Altruism
- Problem-solving
- Social connection
- The drive to acquire knowledge
- Fairness

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### Do Children Care What We Think? Part I

to Mrs. Cowdell  
Dear Mrs. Cowdell,  
I am writing you this letter.  
I'm just asking if you  
can forgive me for talking back  
to you. I know who I did was very  
wrong and I wanted to say  
see it's not that well, it's just that I  
just a kid and kids make mistakes but  
I'm sure you knew that Mrs. Cowdell  
what I'm trying to say is that I'm very  
very, very sorry.

Sincerely  
Drew

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### Do Children Care What We Think? Part II

to Mrs. Cowdell  
Why I Will  
Never do this again  
Dear Mrs. Cowdell,  
Mrs. Cowdell, here are some  
reasons why I will never do it  
again. I want to get a good  
education and if I keep this up I  
will not be able to achieve this goal.  
#2 Because I love to learn and I  
don't want to lose that opportunity.  
#2  
I ♥ School

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Biology is not destiny but it does effect probability. In every risk group there are those who manage to transition successfully into adult life despite their adversities.




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## Resilience

- A process leading to good outcome despite high risk
- The ability to function competently under stress
- The ability to recover from trauma and adversity




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"I'm not afraid about my girlfriends and myself, we'll squeeze through somehow, though I'm not too certain about my math."

Anne Frank  
June 21, 1942




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"I have lots of courage, I feel so strong and as if I can bear a great deal, I feel so free and so young! I was glad when I first realized it, because I don't think I shall easily bow down before the blows that inevitably come to everyone."

Anne Frank  
July 15, 1944




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The pathways that lead to positive adaptation despite high risk and adversity are complex and greatly influenced by context therefore it is not likely that we will discover a magic (generic) bullet.

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Resilient children are not simply born that way nor are they made from scratch by their experiences. Genetic and environmental experiences loom large as protectors against a variety of risks to healthy development ranging from resistance to bacteria and viruses to resilience to maltreatment and rejection.

Kirby Deater-Deckard

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Resilience is Predicted By Factors Within:



The Child



The Family



The Culture

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Risk and Protective Factors: In the Individual

Risks

- Female gender
- Early puberty
- Difficult temperament: inflexibility, low positive mood, withdrawal, poor concentration
- Low self-esteem, perceived incompetence, negative explanatory and inferential style
- Anxiety
- Low-level depressive symptoms and dysthymia
- Insecure attachment
- Poor social skills: communication and problem-solving skills
- Extreme need for approval and social support

Protective

- High IQ
- Positive social skills
- Willingness to please adults
- Religious and club affiliations
- Positive physical development
- Academic achievement

Substance Abuse and Mental Health Services Administration (2009). Risk and protective factors for mental, emotional, and behavioral disorders across the life cycle. Summarized from:  
[http://dhs.alaska.gov/dhs/Documents/Prevention/programs/spfig/pdf/ICM\\_Matrix\\_8%20%11\\_FINAL.pdf](http://dhs.alaska.gov/dhs/Documents/Prevention/programs/spfig/pdf/ICM_Matrix_8%20%11_FINAL.pdf)

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Risk and Protective Factors: In the Individual

Risks

- Low self-esteem
- Shyness
- Emotional problems in childhood
- Conduct disorder
- Favorable attitudes toward drugs
- Rebelliousness
- Early substance use
- Antisocial behavior
- Head injury
- Marijuana use
- Childhood exposure to lead or mercury (neurotoxins)

Protective

- High self-esteem
- Emotional self-regulation
- Good coping skills and problem-solving skills
- Engagement and connections in two or more of the following contexts: school, with peers, in athletics, employment, religion, culture

Substance Abuse and Mental Health Services Administration (2009). Risk and protective factors for mental, emotional, and behavioral disorders across the life cycle. Summarized from:  
[http://dhs.alaska.gov/dhs/Documents/Prevention/programs/spfig/pdf/ICM\\_Matrix\\_8%20%11\\_FINAL.pdf](http://dhs.alaska.gov/dhs/Documents/Prevention/programs/spfig/pdf/ICM_Matrix_8%20%11_FINAL.pdf)

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## Risk and Protective Factors: In the Family

### Risks

- Inadequate or inappropriate child rearing practices,
- Home discord
- Maltreatment and abuse
- Large family size
- Parental antisocial history
- Poverty
- Exposure to repeated family violence
- Divorce
- Parental psychopathology
- Teenage parenthood
- A high level of parent-child conflict
- A low level of positive parental involvement
- Family dysfunction
- Poor parental supervision
- Sexual abuse

### Protective

- Participation in shared activities between youth and family (including siblings and parents)
- Providing the forum to discuss problems and issues with parents
- Availability of economic and other resources to expose youth to multiple experiences
- The presence of a positive adult (ally) in the family to mentor and be supportive
- Family provides structure, limits, rules, monitoring, and predictability
- Supportive relationships with family members
- Clear expectations for behavior and values

Substance Abuse and Mental Health Services Administration (2009). Risk and protective factors for mental, emotional, and behavioral disorders across the life cycle. Summarized from: [http://dhs.alaska.gov/dbh/Documents/Prevention/programs/nplsg/pdfs/IOM\\_Matrix\\_8%20x11\\_FINAL.pdf](http://dhs.alaska.gov/dbh/Documents/Prevention/programs/nplsg/pdfs/IOM_Matrix_8%20x11_FINAL.pdf)

## Risk and Protective Factors: In Peers

### Risks

- Spending time with peers who engage in delinquent or risky behavior
- Gang involvement
- Less exposure to positive social opportunities because of bullying and rejection

### Protective

- Positive and healthy friends to associate with
- Engagement in healthy and safe activities with peers during leisure time (e.g., clubs, sports, other recreation)

Substance Abuse and Mental Health Services Administration (2009). Risk and protective factors for mental, emotional, and behavioral disorders across the life cycle. Summarized from: [http://dhs.alaska.gov/dbh/Documents/Prevention/programs/nplsg/pdfs/IOM\\_Matrix\\_8%20x11\\_FINAL.pdf](http://dhs.alaska.gov/dbh/Documents/Prevention/programs/nplsg/pdfs/IOM_Matrix_8%20x11_FINAL.pdf)

## Risk and Protective Factors: School and Community

### Risks

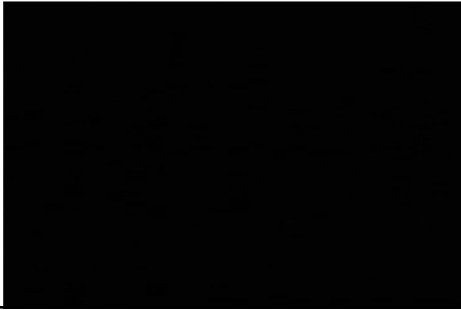
- Poor academic performance
- Enrollment in schools that are unsafe and fail to address the academic and social and emotional needs of children and youth
- Low commitment to school
- Low educational aspirations
- Poor motivation
- Living in an impoverished neighborhood
- Social disorganization in the community in which the youth lives
- High crime neighborhoods

### Protective

- Enrollment in schools that address not only the academic needs of youth but also their social and emotional needs and learning
- Schools that provide a safe environment
- A community and neighborhood that promote and foster healthy activities for youth

Substance Abuse and Mental Health Services Administration (2009). Risk and protective factors for mental, emotional, and behavioral disorders across the life cycle. Summarized from: [http://dhs.alaska.gov/dbh/Documents/Prevention/programs/nplsg/pdfs/IOM\\_Matrix\\_8%20x11\\_FINAL.pdf](http://dhs.alaska.gov/dbh/Documents/Prevention/programs/nplsg/pdfs/IOM_Matrix_8%20x11_FINAL.pdf)

# Todd: Journey of a Youth with ADHD




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Not surprisingly all but two things we do as psychologists are dimensional!

- Diagnosis
- Eligibility Determination




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We Are the First Congress on Defining Mental Illness (circa 1820)




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How Do We Understand, Define And Categorize Mental Illness?




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How Shall We Understand, Define, Categorize and Evaluate Treatment Response in Mental Illness?

- By etiology or cause?
- By emotions, behaviors and thoughts?
- By impaired function in activities of life?

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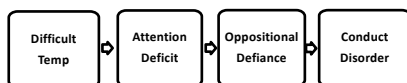
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The Disruptive Continuum of Behavior




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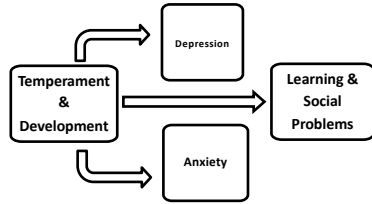
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### The Non-disruptive "Continuum" of Behavior




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### How Shall We Understand, Define and Categorize Mental Illness and Developmental Problems?



- By etiology or cause?
- By emotions, abilities, behaviors and thoughts?
- By impaired function in activities of life?

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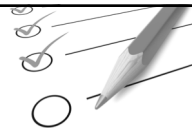
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### Diagnosis



#### *Medicine/Medical.*

The process of determining by examination the nature and circumstances of a diseased condition.

The decision reached from such an examination.

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## Eligible

*adjective*

**Having the right to do or obtain something, satisfying the appropriate conditions.**

"Customers who are eligible for discounts"

Synonyms: *entitled, permitted, allowed, qualified, able*

"Those people eligible to vote"  
(of a person) *desirable or suitable as a partner in marriage.*  
"The world's most eligible bachelor"

Synonyms: *desirable, suitable*



**Determining eligibility is an outcome best understood and obtained by a thorough assessment.**

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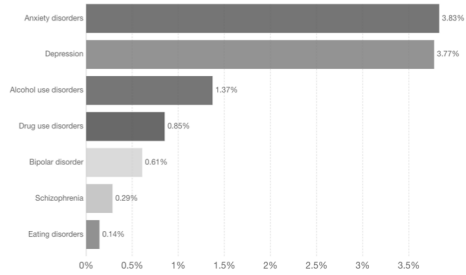
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## Prevalence by mental and substance use disorder, World, 2016

Share of the total population with a given mental health or substance use disorder. Figures attempt to provide a true estimate (going beyond reported diagnosis) of disorder prevalence based on medical, epidemiological data, surveys and meta-regression modelling.




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How distinct are these disorders from each other?

Much less so than makes me comfortable!




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### Co-Occurrence/Comorbidity

Dx	ASD	ODD	CD	Anx	Dep	LD
ADHD	59%	47%	22%	35%	41%	45%
ASD		4% to 37%	1% to 10%	42%	1.4% to 38%	70%+
ODD			42%	62%	39%	55%+

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### How distinct are these disorders from each other?

Although the National Institute of Mental Health (NIMH) has prepared well for this undertaking, much remains to be done. Rigorous diagnostic procedures are available for some mental disorders, but not all. Studies to identify the genes that influence the onset of mental disorders have been initiated, but too few are large enough to efficiently detect these genes. Dedicated investigators are working on various aspects of mental disorders, but more researchers with training in molecular and statistical genetics are required (NIH,1997)




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### How distinct are these disorders from each other?

For over a century, psychiatric disorders have been defined by expert opinion and clinical observation. The modern DSM has relied on a consensus of experts to define categorical syndromes based on clusters of symptoms and signs, and, to some extent, external validators, such as longitudinal course and response to treatment. In the absence of an established etiology, psychiatry has struggled to validate these descriptive syndromes, and to define the boundaries between disorders and between normal and pathologic variation.

Expert Review Published: 03 January 2018

Psychiatric genetics and the structure of psychopathology

Jordan W. Smalley, PhD, A. Andreasen, Howard J. Edenberg, Stephen V. Faraone, Stephen J. Glatt & Kenneth S. Kendler

Molecular Psychiatry (2018) | Download Citation &

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## How distinct are these disorders from each other?

Before the modern era of genomic research, family and twin studies demonstrated that all major psychiatric disorders aggregate in families and are heritable. Over the past decade, the success of large-scale genomic studies has confirmed several key principles: (1) psychiatric disorders are highly polygenic, reflecting the contribution of hundreds to thousands of common variants of small effect and rare (often de novo) SNVs and CNVs; (2) genetic influences on psychopathology commonly transcend the diagnostic boundaries of our clinical DSM nosology. At the level of genetic etiology, there are no sharp boundaries between diagnostic categories or between disorder and normal variation

Expert Review Published 06 January 2018

### Psychiatric genetics and the structure of psychopathology

Jonathan W. Smalley<sup>1</sup>, Lisa A. Anderson, Howard J. Edenberg, Stephen V. Faraone, Stephen J. Glatt & Kenneth S. Kendler  
Molecular Psychiatry (2018) | Download Citation &

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Comorbidity is the  
***RULE***  
not the Exception




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## How Shall We Understand, Define and Categorize Mental Illness?

- By etiology or cause?
- By emotions, behaviors and thoughts?
- By impaired function in activities of life?

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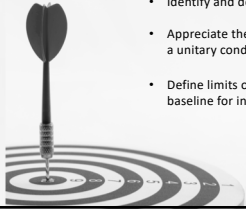
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## What is the Goal of a Comprehensive Evaluation?



- Identify and define symptoms?
- Identify and define strengths and weaknesses?
- Appreciate the relationship of a set of symptoms to a unitary condition?
- Define limits of functional impairment to set a baseline for intervention?

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## Components of a Thorough Assessment

- History
- Broad Spectrum Questionnaires (Parent and Teacher)
- Impairment. Risk. Executive Functioning
- Narrow Spectrum Questionnaires (Parent and Teacher)
- Self report Questionnaires
- Ability Assessment
- Achievement Assessment
- Interview with student




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## General Guidelines for a Comprehensive Evaluation

- A distinction should be made between acute vs. chronic problems.
- Person and environment protective factors need to be understood.
- Assessment should be strength and risk focused.
- Test results should be presented in ways that are useful to consumers (e.g. family, school, etc.).
- The least amount of assessment needed to answer referral questions should be completed.




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### Person Attributes Associated With Successful Coping\*

- Affectionate, engaging temperament.
- Sociable.
- Autonomous.
- Above average IQ.
- Good reading skills.
- High achievement motivation.
- Positive self-concept.
- Impulse control.
- Internal locus of control.
- Planning skills.
- Faith.
- Humorous.
- Helpfulness.

\*Replicated in 2 or more studies.

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### Environmental Factors Associated With Successful Coping\*

- Smaller family size.
- Maternal competence and mental health.
- Extended family involvement.
- Close bond with primary caregiver.
- Supportive siblings.
- Living above the poverty level.
- Friendships.
- Supportive teachers.
- Successful school experiences.
- Involvement in pro-social organizations.

\*Replicated in 2 or more studies.

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The pathways that lead to positive adaptation despite high risk and adversity are complex and greatly influenced by context therefore it is not likely that we will discover a magic (generic) bullet.

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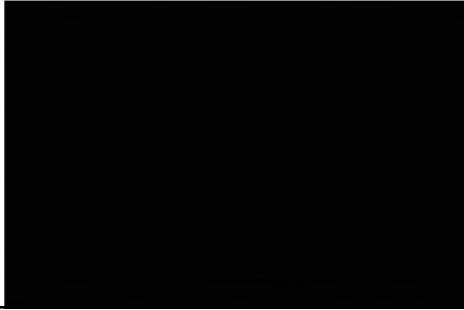
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### Todd: Journey of a Youth with ADHD



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Determining diagnosis or eligibility is an outcome best understood and obtained by a thorough assessment.



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### Critical Issues In Assessment

- Demographics
- Symptoms vs. consequences
- Categories vs. dimensions
- Eligibility vs. diagnosis
- Developmental pathways: accept a moment in time
- There are no shortcuts
- Assess the environment



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### Critical Issues in Assessment



- Assess for intervention
- Understand positive and negative predictive power
- Understand sensitivity vs. specificity
- Begin with the disruptive/non-disruptive continuum
- Keep low incidence problems in mind
- Consider resilience (protective) factors
- Measure impairment

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### How the Brain Works Ability, Knowledge and Skill




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**Why is the  
assessment of  
impairment  
critical to a  
comprehensive  
evaluation?**




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An exhaustive review of the literature demonstrates that the relationship between symptoms and functioning remains unexpectedly weak and often bidirectional (McKnight and Kashdan, 2009).



MHS

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**Impairment is the reduced ability to meet the demands of life because of a psychological, physical, or cognitive condition.**




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## SYMPTOMS VS. IMPAIRMENT

Impairment is not the same as symptoms

☐ Symptoms are physical, cognitive or behavioral **manifestations** of a disorder.

☐ Impairments are the functional **consequences** of these **symptoms**.



Inattention



Difficulty completing homework

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## SYMPTOMS VS. IMPAIRMENT

Impairment can exist absent of formal diagnosis.  
(Balazs et al., 2013; Wille et al., 2008)

In one study 14.2% of a sample of children were significantly impaired without a formal diagnosis.  
(Angold et al., 1999)

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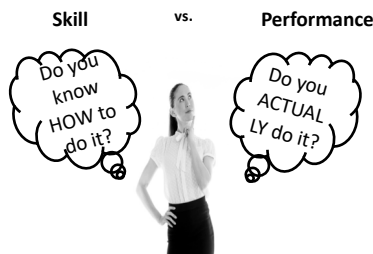
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## Adaptive Behavior vs. Impairment




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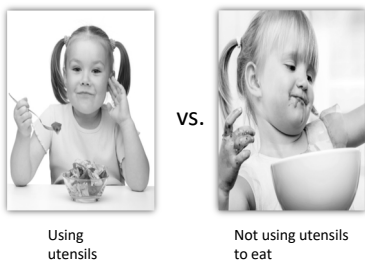
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## Adaptive Behavior vs. Impairment




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## Symptoms vs. Impairment



Inattention

VS.



Difficulty completing homework

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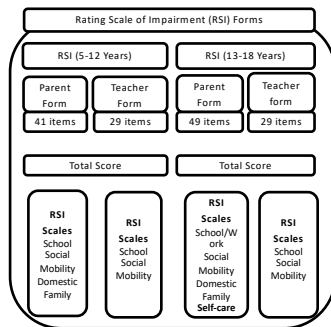
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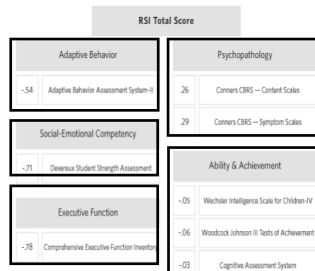
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## Relationship Between The RSI And Other Measures




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### Relationship Between The RSI And Other Impairment Measures

- RSI and the Barkley Functional Impairment Scale (BFIS-CA)
  - Child Sample corrected  $r = .55$  to  $.67$
  - Youth Sample corrected  $r = .63$  to  $.71$
- RSI and the Children's Global Assessment Scale (CGAS)
  - Corrected  $r = -.34$  to  $-.51$




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What do we mean by the term Executive Function(s)?

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### Executive Function (s)

- In 1966 Alexandr Luria first wrote and defined the concept of Executive Function (EF)
- He credited Bianchi (1895) and Bekhterev (1905) with the initial definition of the process



1902 - 1977

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## What is/are Executive Function(s)

There is no formal excepted definition of EF

- We typically find a vague general statement of EF (e.g., goal-directed action, cognitive control, top-down inhibition, effortful processing, etc.).
- Or a listing of the constructs such as
  - Inhibition,
  - Working Memory,
  - Planning,
  - Problem-Solving,
  - Goal-Directed Activity,
  - Strategy Development and Execution,
  - Emotional Self-Regulation,
  - Self-Motivation



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## Does Experience Shape EF?

- The Family Life Project has demonstrated that poverty is associated with elevated cortisol in infancy and early childhood.
- This association is mediated through characteristics of the household.
- Parenting sensitivity mediates the relationship between poverty and stress physiology.
- In combination parenting sensitivity and elevated cortisol mediate the association between poverty and poor EF in children.



Family Life  
PROJECT



APPLIED DEVELOPMENTAL PSYCHOLOGY, CHILD, 27 (1-3), 813  
Copyright © Taylor & Francis Group, LLC  
ISSN: 0192-6222 print/ISSN 1366-5847 online  
DOI: 10.1080/01926222.2011.595493



### Long-Term Cognitive Sequelae: Abused Children Without PTSD

Robert B. Perna  
Behavioral Medicine Department, Walter Rehabilitation Hospital, Augusta, Georgia

Mark Kielbaso  
Baystate Neuro-Rehabilitation Services, Lewiston, Maine

Many lines of research suggest that childhood abuse and neglect are associated with later developing psychiatric diagnoses, academic problems, cognitive difficulty, and possible brain changes as measured through brain imaging. Data were collected on children (N=41) who completed a neuropsychological evaluation. Of those evaluated, 19 had a documented history of physical and/or emotional abuse or neglect and 22 had no history of abuse/neglect. When controlling for Full-Scale IQ (FISQ), the abused children had significantly lower scores on measures of executive functioning (EF) than the non-abused children.

Long-term cognitive sequelae of childhood abuse and neglect were more likely to subsequently be diagnosed with a behavioral or emotional disorder. Consistent with psychological theories and imaging studies, our data are suggestive that childhood abuse and neglect are associated with later development of behavioral and emotional disorders and areas of cognitive weakness and possible impairment. Future research may be conducted to clarify these effects, the possibility of a dose-effect relationship, and the role of neurobiological mechanisms in the process.

**Key words:** abuse/neglect, executive dysfunction, neuropsychological assessment

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### What Neural Activities Require EF?

- Those that involve planning or decision making.
- Those that involve error correction or troubleshooting.
- Situations when responses are not well-rehearsed or contain novel sequences of actions.
- Dangerous or technically difficult situations.
- Situations that require the overcoming of a strong habitual response or resisting temptation.

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### Goldstein, Naglieri, Princiotta, & Otero (2013)



- We found more than 30 definitions of EF(s).
- Executive function(s) has come to be an umbrella term used for many different abilities, including planning, working memory, attention, inhibition, self-monitoring, self-regulation and initiation carried out by pre-frontal areas of the frontal lobes.

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### What is Executive Function(s)

1. Barkley (2011): "EF is thus a **self-directed set of actions**" (p. 11).
2. Dawson & Guare (2010): "Executive skills allow us to **organize our behavior over time**" (p. 1).
3. Delis (2012): "Executive functions reflect the **ability to manage and regulate one's behavior** (p. 14).

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### What is Executive Function(s)

4. Denckla (1996): "EF (is) a set of **domain-general control processes...**" (p. 263).
5. Gioia, Isquith, Guy, & Kenworthy (2000): "**a collection of processes that are responsible for guiding, directing, and managing cognitive, emotional, and behavioral functions**" (p. 1).

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### What is Executive Function(s)

6. Pribram (1973): "**executive programmes ...to maintain brain organization**" (p. 301).
7. Roberts & Pennington (1996): EF "**a collection of related but somewhat distinct abilities such as planning, set maintenance, impulse control, working memory, and attentional control**" (p. 105).

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### What is Executive Function(s)

6. Stuss & Benson (1986): "**a variety of different capacities that enable purposeful, goal-directed behavior, including behavioral regulation, working memory, planning and organizational skills, and self-monitoring**" (p. 272).
7. Welsh and Pennington (1988): "**the ability to maintain an appropriate problem-solving set for attainment of a future goal**" (p. 201).

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## What is Executive Function(s)

10. McCloskey (2006): **"a diverse group of highly specific cognitive processes collected together to direct cognition, emotion, and motor activity, including ...the ability to engage in purposeful, organized, strategic, self-regulated, goal directed behavior"** (p. 1)

"think of executive functions as a set of independent but coordinated processes rather than a single trait" (p. 2).

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## What is Executive Function(s)

10. Lezak (1995): **"a collection of interrelated cognitive and behavioral skills that are responsible for purposeful, goal-directed activity," ...**
11. **"how and whether a person goes about doing something"** (p. 42).
12. Luria (1966): **"... ability to correctly evaluate their own behavior and the adequacy of their actions"** (p. 227).

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## Executive Functions

**Executive functions**

From Wikipedia, the free encyclopedia  
Redirected from Executive system

The **executive system** is a theorized cognitive system in psychology that controls and manages other cognitive processes. It is also referred to as the **executive function**, **executive functions**, **supervisory attentional system**, or **cognitive control**.

The concept is used by psychologists and neuroscientists to describe a loosely defined collection of brain processes which are responsible for planning, cognitive flexibility, abstract thinking, rule acquisition, initiating appropriate actions and inhibiting inappropriate actions, and selecting relevant sensory information.

**Hypothesized role**

The executive system is thought to be heavily involved in handling novel situations outside the domain of some of our automatic psychological processes that could be explained by the reproduction of learned schemas or set behaviors. Psychologists Don Norman and Tim Shallice have outlined two types of situation where routine

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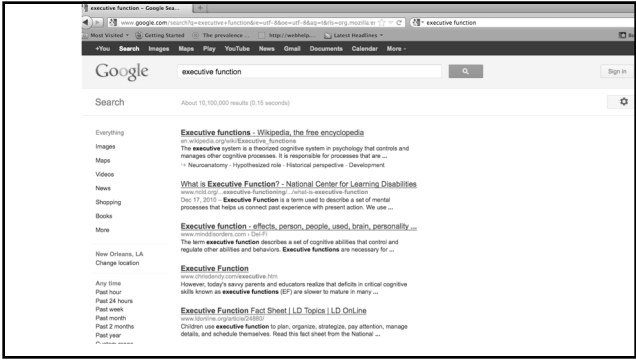
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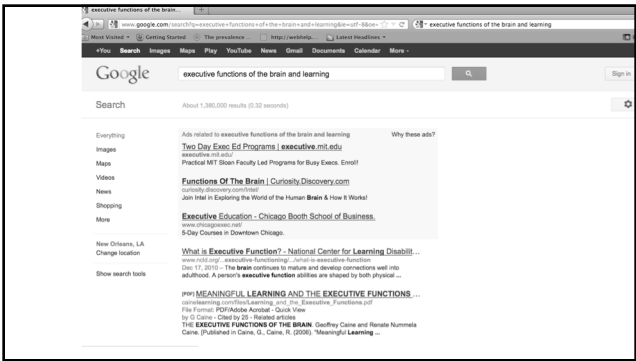
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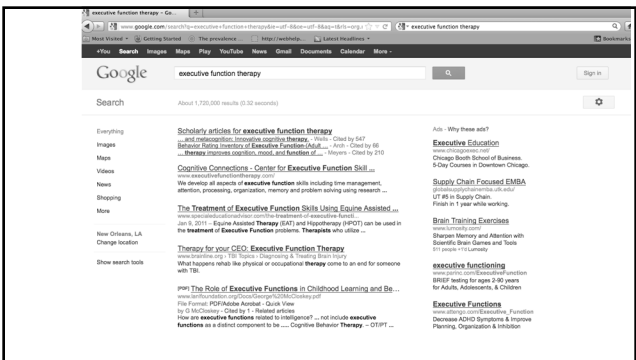
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And Finally. . .

A NICHD panel in 1994  
identified 33 EFs by consensus!



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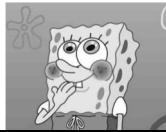
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The Top Six Were:

- Self-regulation
- Sequencing of behavior
- Flexibility
- Response inhibition
- Planning
- Organization of behavior



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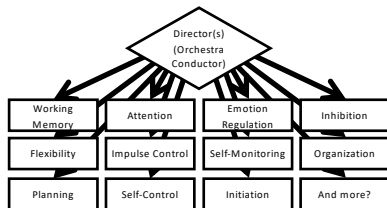
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Three Categories of Theories

- Regulators that control
- Abilities (cognitive processes)
- Behaviors



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A similarly named ability and behavior (e.g. planning) may only overlap to a small extent in explaining outcome.

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In fact EF ability likely forms the foundation reflected in behavior, achievement, emotional regulation and socialization. The contributed variance likely is impacted by a host of other variables. Ability and knowledge interact with these variables to shape skillful behavior.

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Are EF challenges associated with other psychiatric and developmental conditions?



"Oh yes. We single out someone every week and highlight their performance."

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## EF and ADHD

EF deficits are not necessarily unique to ADHD. They are neither necessary nor sufficient to make a diagnosis of ADHD. When EF impairments are measured in children with ADHD they tend to reflect specific rather than global impairments.

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## EF and Other Disruptive Disorders (ODD & CD)

Early reviews reported that EF deficits were not characteristic of children and adolescents with ODD and CD after comorbid ADHD was factored out. More recent studies, however, suggest that inhibition deficits may be characteristic of both ADHD and CD but whether children with CD display impairments on additional EF measures is equivocal.

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## EF and Tourette's

Distinct and robust impairments in EF do not appear to be characteristic of children with TD.

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## EF and Anxiety Disorders

EF deficits in set-shifting, cognitive flexibility, concept formation, interference control, and verbal fluency have been documented among children with separation anxiety disorder, overanxious disorder, and PTSD. EF in OCD has not been well addressed.

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## EF and Depression

Scant research has been conducted on the EF abilities among youth with depression. Studies that have included older adolescents have suggested some degree of sensitivity of EF tasks in identifying unipolar depression, but less specificity.

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## EF and Bi-Polar Disorder

There is a growing consensus about the nature of BD among children. Several studies have targeted its EF concomitants. Although results often have been confounded with significant co-morbidity issues, children and adolescents with BD reliably have demonstrated impairments relative to those without any history of mood disorders on several EF measures (e.g. working memory, set shifting).

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## EF and Traumatic Brain Injury

Deviant Neurograph 2011 December;5(4):337-345

Original Article

### Pragmatic and executive functions in traumatic brain injury and right brain damage

An exploratory comparative study

Nicolas Zimmermann<sup>a</sup>, Gigiane Gindri<sup>a</sup>,  
Camila Rosa de Oliveira<sup>a</sup>, Raquelle Paz Fonseca<sup>a</sup>

**Abstract** - Objective: To describe the frequency of pragmatic and executive deficits in right brain damaged (RBD) and in traumatic brain injury (TBI) patients, and to verify possible dissociations between pragmatic and executive functions in these two groups. Methods: The sample comprised 7 cases of TBI and 7 cases of RBD. All participants were assessed by means of tasks from the Manual Communication Evaluation Battery and executive functions tests including the Trail Making Test, Stroop Test, Wisconsin Card Sorting Test, semantic and phonemic verbal fluency tasks, and working memory tasks from the Brazilian Brief Neuropsychological

TBI individuals again exhibited a general profile of executive dysfunction, affecting mainly working memory, initiation, inhibition, planning and switching. Pragmatic and executive deficits were generally associated upon comparisons of RBD patients and TBI cases, except for two simple dissociations: two post-TBI cases showed executive deficits in the absence of pragmatic deficits. Discussion: Pragmatic and executive deficits can be very

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## EF Deficits and ASD

J Child Psychol Psychiatr. Vol. 51, No. 1, pp. 100-110, 1991  
Printed in Great Britain

0145-9000/91 \$1.00 + 0.00  
Copyright © 1991 Association for Child Psychology and Psychiatry

### Executive Function Deficits in High-Functioning Autistic Individuals: Relationship to Theory of Mind

Sally Ozonoff,\* Bruce F. Pennington\* and Sally J. Rogers†

**Abstract**—A group of high-functioning autistic individuals was compared to a clinical control on spatial or other control measures. Second-order theory of mind and executive function deficits were widespread among the autistic group, while first-order theory of mind deficits were found in only a subset of the sample. The relationship of executive function and theory of mind deficits to each other, and their primacy to autism, are discussed.

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## EF and Learning Disabilities

### Working Memory Impairments in Children with Specific Arithmetic Learning Difficulties

Janet F. McLean, Graham J. Hitch

Lancaster University, Lancaster, United Kingdom

http://dx.doi.org/10.1006/jlde.1999.2016, How to Cite or Link Using DOI

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Abstract

Working memory impairments in children with difficulties in arithmetic have previously been investigated using questionable selection techniques and control groups, leading to problems concluding where deficits may occur. The present study attempted to overcome these criticisms by assessing 8-year-old children with difficulties specific to arithmetic, as indicated by normal reading, and comparing them with both non-matched and ability-matched controls. A battery of 10 tasks was used to measure different aspects of

and some aspects of executive processing. Compared to ability-matched controls, they were impaired only on one task designed to assess executive processes for holding and manipulating information in long-term memory. These deficits in executive and spatial aspects of working memory seem likely to be important factors in poor arithmetical attainment.

If all of these conditions are statistically related to behaviors and abilities reflecting EF than a common denominator must exist.

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Impairment in behaviors associated with EF can have multiple etiologies often operating simultaneously.



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Impaired Behavior Associated With Poor EF Can Result From:

- Lack of ability.
- Lack of knowledge.
- Lack of motivation.
- Internalizing symptoms.
- Externalizing symptoms.
- Poor impulse control.

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Starting with an assessment of EF behaviors defines the real life landscape and can be used as a foundation to than explore etiologies.



"Hard work and putting your nose to the grindstone, son. That's the way to get ahead. At least until you start earning a substantial income. Then you can just throw money at your problems."

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## Executive Function(s)

- One way to examine this issue is to research the factor structure of behaviors related to EF(s)
- To do so, we examined the factor structure of the Comprehensive Executive Function Inventory (CEFI)
- We conducted a series of research studies to answer the following question:
  - What is the underlying structure of the behaviors assessed on the CEFI?
  - Is there is just one underlying factor called executive function), or do the behaviors group together into different constructs suggesting a multidimensional structure?

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## CEFI Scales

Each form yields a **Full Scale** score and 9 separate content scales which contain items as follows...

Consistency Index  
Negative Impression Scale  
Positive Impression Scale

Full Scale

**CEFI Scales**  
Attention  
Emotion Regulation  
Flexibility  
Inhibitory Control  
Initiation  
Organization  
Planning  
Self-Monitoring  
Working Memory

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## Group Differences: ADHD

(Naglieri &amp; Goldstein, 2013)

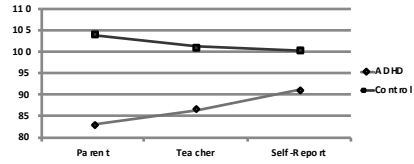


Table 8.19 Differences Between ADHD and Matched General Population Samples: CEPI Full Scale

Form	ADHD	Matched Gen. Pop.	d-ratio	F(df)	P
Parent	M	103.9	-1.59	216.56 (1,340)	< .001
	SD	13.0			
	N	171			
Teacher	M	102.1	-1.07	79.93 (1,278)	< .001
	SD	13.5			
	N	142			
Self-Report	M	100.3	-0.62	22.21 (1,232)	< .001
	SD	14.7			
	N	117			

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## Group Differences: ASD

(Naglieri &amp; Goldstein, 2013)

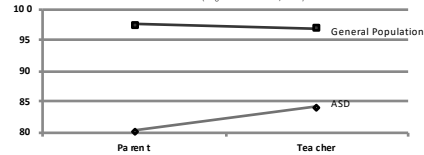


Table 8.20 Differences Between ASD and Matched General Population Samples: CEPI Full Scale

Form	ASD	Matched Gen. Pop.	d-ratio	F(df)	P
Parent	M	97.7	-1.41	48.96 (1,96)	< .001
	SD	12.2			
	N	48			
Teacher	M	96.9	-0.99	23.11 (1,92)	< .001
	SD	12.7			
	N	47			

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## Group Differences: Learning Disabilities

(Naglieri &amp; Goldstein, 2013)

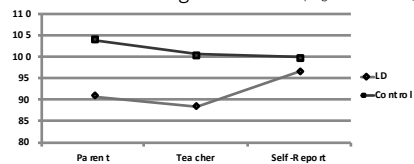


Table 8.22 Differences Between LD and Matched General Population Samples: CEPI Full Scale

Form	LD	Matched Gen. Pop.	d-ratio	F(df)	P
Parent	M	103.9	-0.92	19.89 (1,93)	< .001
	SD	14.4			
	N	47			
Teacher	M	100.6	-0.91	37.29 (1,178)	< .001
	SD	13.4			
	N	90			
Self-Report	M	100.0	-0.21	1.45 (1,126)	0.231
	SD	15.9			
	N	64			

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## Group Differences: Mood Disorders (Naglieri & Goldstein, 2013)

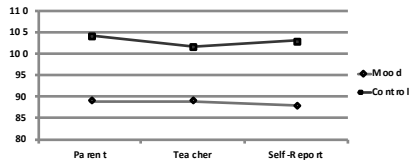


Table 8.21 Differences Between Mood Disorder and Matched General Population Samples: CEPI Full Scale

Form		Mood Disorder	Matched Gen. Pop.	z-ratio	z (CI)	p
Parent	M	88.9	104.3	-1.11	22.66 (1.71)	< .001
	SD	13.8	13.8			
	N	36	37			
Teacher	M	88.9	101.7	-1.01	14.9 (1.57)	< .001
	SD	12.8	12.8			
	N	29	30			
Self-Report	M	88.0	103.1	-1.09	16.94 (1.53)	< .001
	SD	13.9	13.9			
	N	27	28			

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## Todd: Journey of a Youth with ADHD




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## Ability and Achievement

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## PASS Theory

- **PASS** theory is a modern way to define 'ability' based on measuring neurocognitive abilities
- **P**lanning = THINKING ABOUT THINKING
- **A**ttention = BEING ALERT
- **S**imultaneous = GETTING THE BIG PICTURE
- **S**uccessive = FOLLOWING A SEQUENCE

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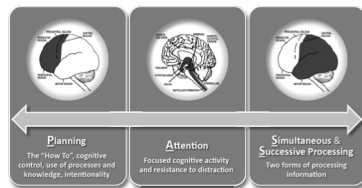
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## The Brain as PASS

PASS: A neuropsychological approach to the Brain based on three Functional Units described by A. R. Luria (1972)



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## PASS Theory: Planning

- **Planning** is a neurocognitive ability that a person uses to determine, select, and use efficient solutions to problems
  - problem solving
  - developing plans and using strategies
  - retrieval of knowledge
  - impulse control and self-control
  - control of processing

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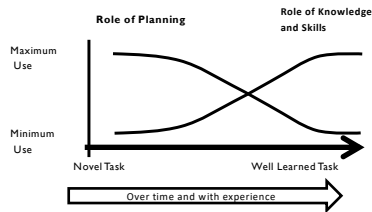
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### Knowledge and Planning Learning Curves

- Learning depends upon instruction and intelligence (PASS)
- At first, PASS plays a major role in learning
- When a new task is learned and practiced it becomes a skill and execution requires less PASS




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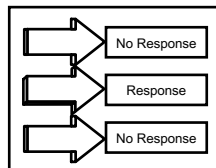
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### PASS Theory

- ▶ **Attention** is a basic neurocognitive ability we use to selectively attend to some stimuli and ignores others
  - focused cognitive activity
  - selective attention
  - resistance to distraction



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### PASS Theory

- **Simultaneous** processing is a basic neurocognitive ability which we use to integrate stimuli into groups and solve problems
  - Stimuli are seen as a whole
  - Each piece must be related to the others

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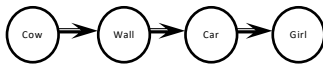
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### PASS Theory: Successive

- **Successive** processing is a basic neurocognitive ability which we use to manage stimuli in a specific serial order
- Stimuli form a chain-like progression
  - Stimuli are not inter-related



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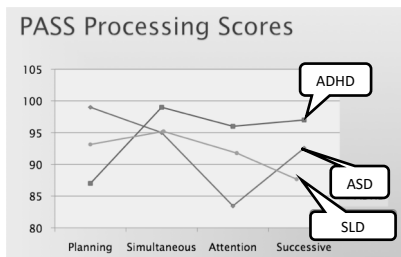
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### Ability Profiles




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### Organizing the Data

- A day in the life
- Ability/Knowledge/Skill
- Take a chronological perspective.
- Risk and Protective factors
- Determining eligibility
- Suggesting possible diagnoses
- Recommending needs
- Considering continuum of services

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No, so called parents,  
 I hate your fucken guts  
 Rob, You lied and said that  
 you would spend time  
 with me.  
 Kathleen,  
 Same with you

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I am not  
 going to do  
 my homework  
 until I have <sup>new</sup>  
 toy in my hands.

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DEAR GOD,  
 I wish I could be  
 better in School.  
 Can you help me.

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Adopt a Learning to Ride a Bicycle Mindset!

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Through intelligent and ethical educational and therapeutic practices, we can foster self-discipline, mental health, resilience and build educational proficiency in all children without stealing away their dignity and hope.



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ADOPT A LEARNING TO RIDE A  
BICYCLE MINDSET!



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Todd and Others: Journey of Youth With Childhood Challenges



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## Questions?

 [www.samgoldstein.com](http://www.samgoldstein.com)

 [info@samgoldstein.com](mailto:info@samgoldstein.com)

 [@drsamgoldstein](https://twitter.com/drsamgoldstein)

 [@doctorsamgoldstein](https://www.facebook.com/doctorsamgoldstein)

TEDx: <https://www.youtube.com/watch?v=isfw8JJ-eWM>

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