Behavioral Assessment of Youth: Where Comorbidity is the Norm, Not the Exception

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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)

Learning Objectives

Preschool Graduation Part I

Preschool Graduation Part II

The Bus Test

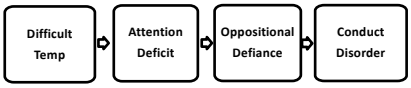
I Had a Revelation in St. Augustine

The world operates along a normal curve!

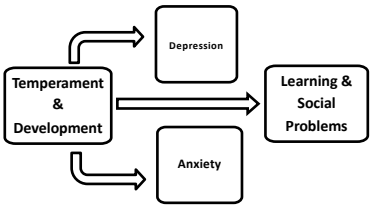
Not surprisingly all but two things we do as psychologists are dimensional!

- Diagnosis
- Eligibility Determination

The Disruptive Continuum of Behavior



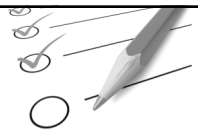
The Non-disruptive Continuum of Behavior



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?

Diagnosis



Medicine/Medical.

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

The decision reached from such an examination.

Eligible

adjective

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

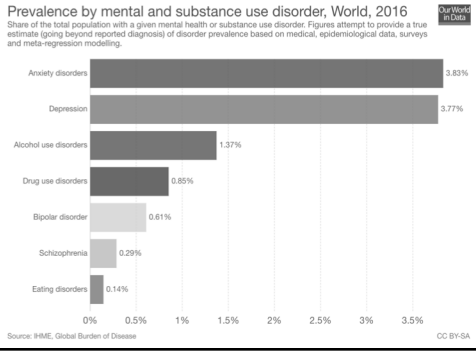
"Customers who are eligible for discounts"

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.



How distinct are these disorders from each other?

Much less so than makes me comfortable!

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%+

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)

NIH National Institute of Mental Health

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: 09 January 2018

Psychiatric genetics and the structure of psychopathology

Jordan W. Smoller, Ole A. Andreassen, Howard J. Edenberg, Stephen V. Faraone, Stephen J. Glatt & Kenneth S. Kendler

Molecular Psychiatry (2018) | Download Citation

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: 09 January 2018

Psychiatric genetics and the structure of psychopathology

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Comorbidity is the

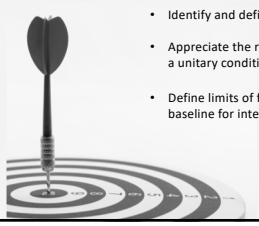
RULE

not the Exception

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?

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?

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**

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.

Person Attributes Associated With Successful Coping*

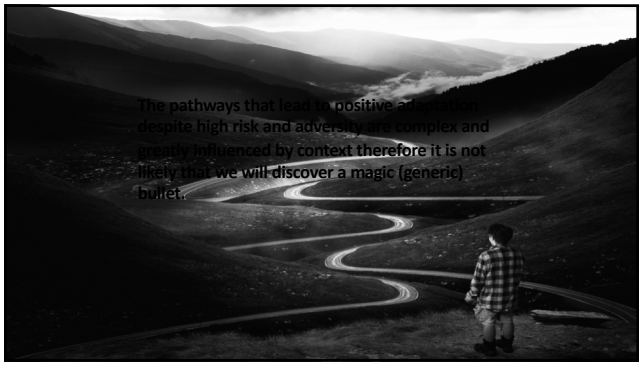
- Affectionate, engaging temperament.
- Sociable.
- Autonomous.
- Above average IQ.
- Good reading skills.
- High achievement motivation.
- Positive self-concept.
- Impulse control.
- Internal locus of control.
- Planning skills.
- Faith.
- Humorous.
- Helpfulness.

*Replicated in 2 or more studies.

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.



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

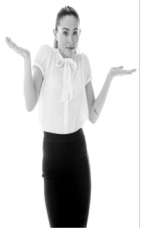
Critical Issues In Assessment

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

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

How the Brain Works
Ability, Knowledge and Skill



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

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

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

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

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)

Adaptive Behavior vs. Impairment

Skill vs. **Performance**

Adaptive Behavior vs. Impairment

vs.

Using utensils

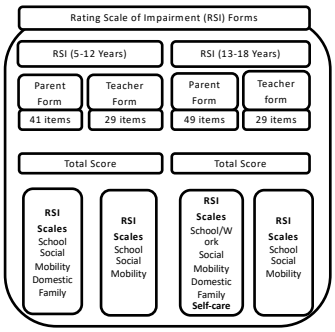
Not using utensils to eat

Symptoms vs. Impairment

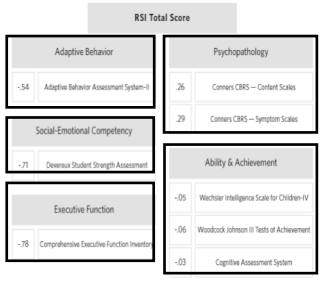
vs.

Inattention

Difficulty completing homework



Relationship Between The RSI And Other Measures



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

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 NEUROPSYCHOLOGY: CHILD, 2: 1–5, 2013
Copyright: © Taylor & Francis Group, LLC
ISSN: 2162-2965 print/2162-2973 online
DOI: 10.1080/09084282.2011.595460

Routledge
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Long-Term Cognitive Sequelae: Abused Children Without PTSD

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Bayside NeuroRehabilitation 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, 18 had a documented history of physical and/or emotional abuse or significant neglect and 23 had no history of abuse/neglect. When controlling for Full-Scale IQ (FSIQ), the abused children had significantly lower scores on measures of executive functioning (Wisconsin

subsequently be diagnosed with a behavioral or emotional disorder. Consistent with psychobiological 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

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 contro**l" (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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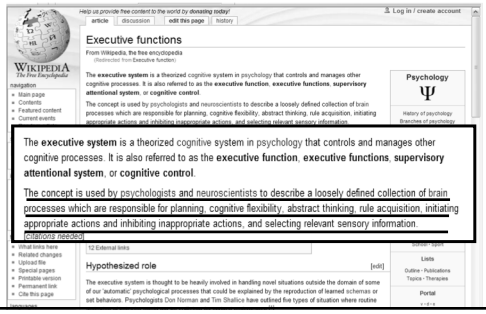
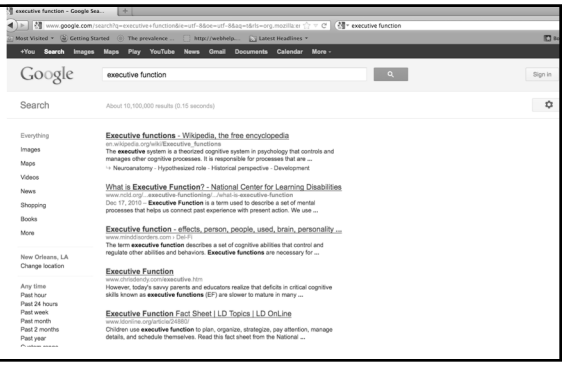
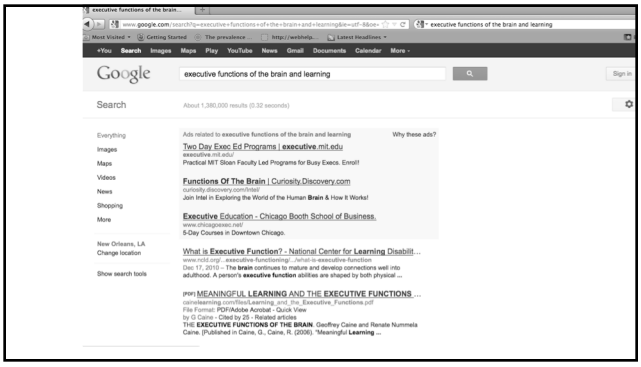
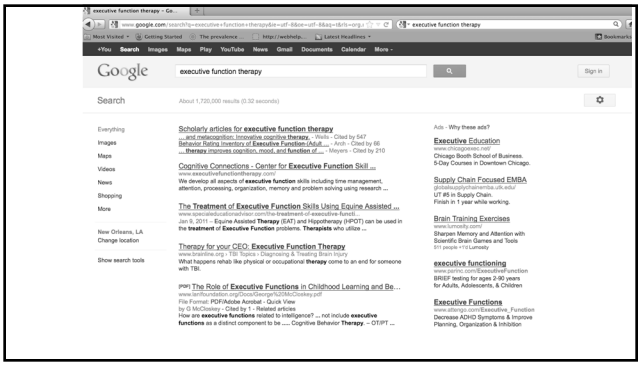
Executive Functions









And Finally. . . .

A NICHD panel in 1994
identified 33 EFs by consensus!

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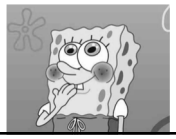
The Top Six Were:

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



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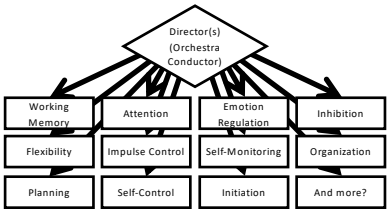
Three Categories of Theories

- 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.

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 co-morbid 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.

EF and Tourette's

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

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.

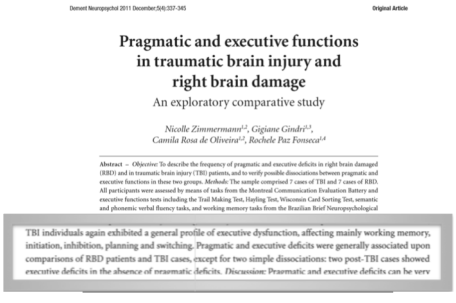
EF and Depression

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.

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).

EF and Traumatic Brain Injury



Dement Neuropsychol 2011 December;5(4):337-345 Original Article

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

An exploratory comparative study

Nicolle Zimmermann[1,2], Gigiane Gindri[2,3], Camila Rosa de Oliveira[2,3], Rochele Paz Fonseca[2,4]

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 Montreal Communication Evaluation Battery and executive functions tests including the Trail Making Test, Hayling 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. Psychiat. Vol. 32, No. 7, pp. 1081–1105, 1991
Printed in Great Britain.

0021-9630/91 $3.00 + 0.00
Pergamon Press plc
© 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/jecp.1999.2516, 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 9-year-old children with difficulties specific to arithmetic, as indicated by normal reading, and comparing them with both
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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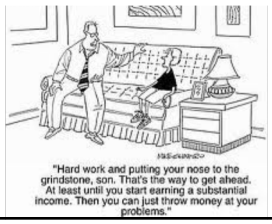
Starting with an assessment of EF behaviors defines the real life landscape and can be used as a foundation to than explore etiologies.



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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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EFI 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 & Goldstein, 2013)

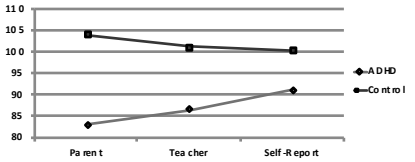

Table 8.19 Differences Between ADHD and Matched General Population Samples: CEFI Full Scale

Form		ADHD	Matched Gen. Pop.	*d*-ratio	*F* (*df*)	*P*
Parent	*M*	83.1	103.9	-1.59	216.56 (1, 340)	< .001
	SD	13.0	13.0			
	N	171	171			
Teacher	*M*	86.7	101.1	-1.07	79.93 (1, 278)	< .001
	SD	13.5	13.5			
	N	138	142			
Self-Report	*M*	91.2	100.3	-0.62	22.21 (1, 232)	< .001
	SD	14.7	14.7			
	N	117	117			

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Group Differences: ASD (Naglieri & Goldstein, 2013)

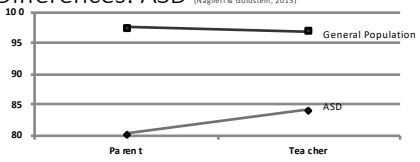

Table 8.20 Differences Between ASD and Matched General Population Samples: CEFI Full Scale

Form		ASD	Matched Gen. Pop.	*d*-ratio	*F* (*df*)	*p*
Parent	*M*	80.4	97.7	-1.41	48.96 (1, 96)	< .001
	SD	12.2	12.2			
	N	48	50			
Teacher	*M*	84.3	96.9	-0.99	23.11 (1, 92)	< .001
	SD	12.7	12.7			
	N	47	47			

Group Differences: Learning Disabilities (Naglieri & Goldstein, 2013)

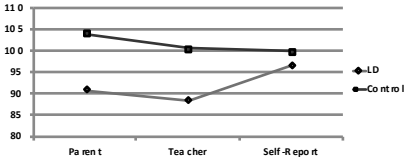

Table 8.22 Differences Between LD and Matched General Population Samples: CEFI Full Scale

Form		LD	Matched Gen. Pop.	*d*-ratio	*F* (*df*)	*p*
Parent	*M*	90.8	103.9	-0.92	19.89 (1, 93)	< .001
	SD	14.4	14.4			
	N	47	48			
Teacher	*M*	88.4	100.6	-0.91	37.29 (1, 178)	< .001
	SD	13.4	13.4			
	N	90	90			
Self-Report	*M*	96.6	100.0	-0.21	1.45 (1, 126)	0.231
	SD	15.9	15.9			
	N	64	64			

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

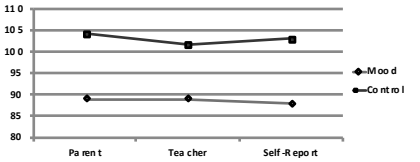

Table 8.21 Differences Between Mood Disorder and Matched General Population Samples: CEFI Full Scale

Form		Mood Disorder	Matched Gen. Pop.	*d*-ratio	*F* (*df*)	*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	16.34 (1, 53)	< .001
	SD	13.9	13.9			
	N	27	28			

Ability and Achievement

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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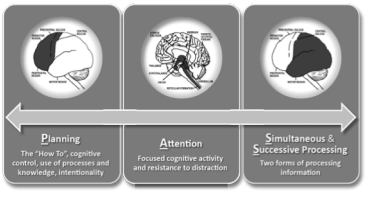
The Brain as PASS

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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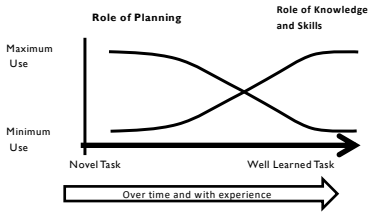
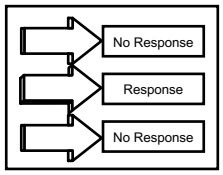
Knowledge and Planning Learning Curves

- 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



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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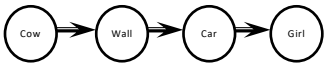
PASS Theory: Successive

- **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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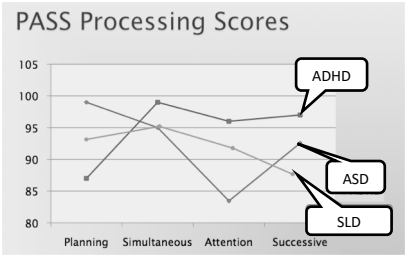
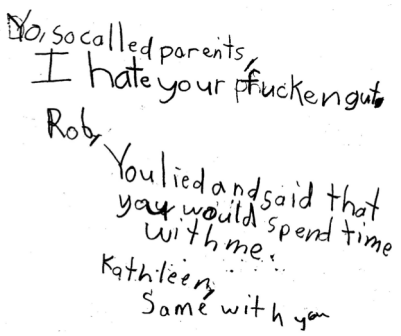
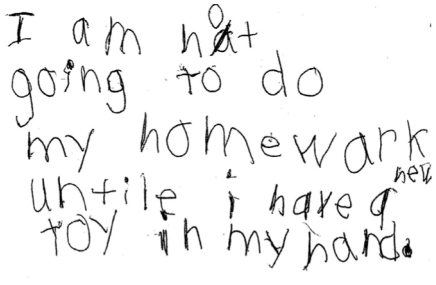
Ability Profiles

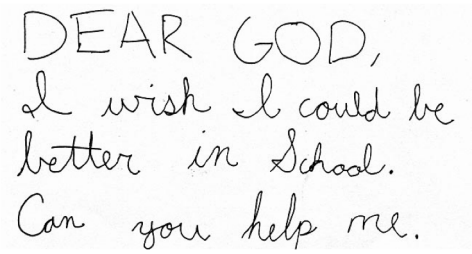


Organizing the Data

- 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







Adopt a Learning to Ride a Bicycle Mindset!

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Questions?

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