Understanding Neuropsychological Testing

Christen Fanelli, Ph.D.

About Me

Clinical psychologist, specializing in neuropsychological testing

Manager, Student Services and School Counseling; Maryland State Department of Education (MSDE)

Outline

What is Neuropsychology?

What is the Neuropsychological Testing Process?

What can I learn from a Neuropsychological Report?

What is Neuropsychology?

A clinical psychologist (Ph.D. or Psy.D., not an M.D.) with specialized training

Works collaboratively with medical doctors, nurses, speech-language pathologists, occupational therapists, physical therapists, rehabilitation therapists, and other professionals

What is a Neuropsychologist?

Neuropsychology

Neuropsychology is a specialty within the field of psychology
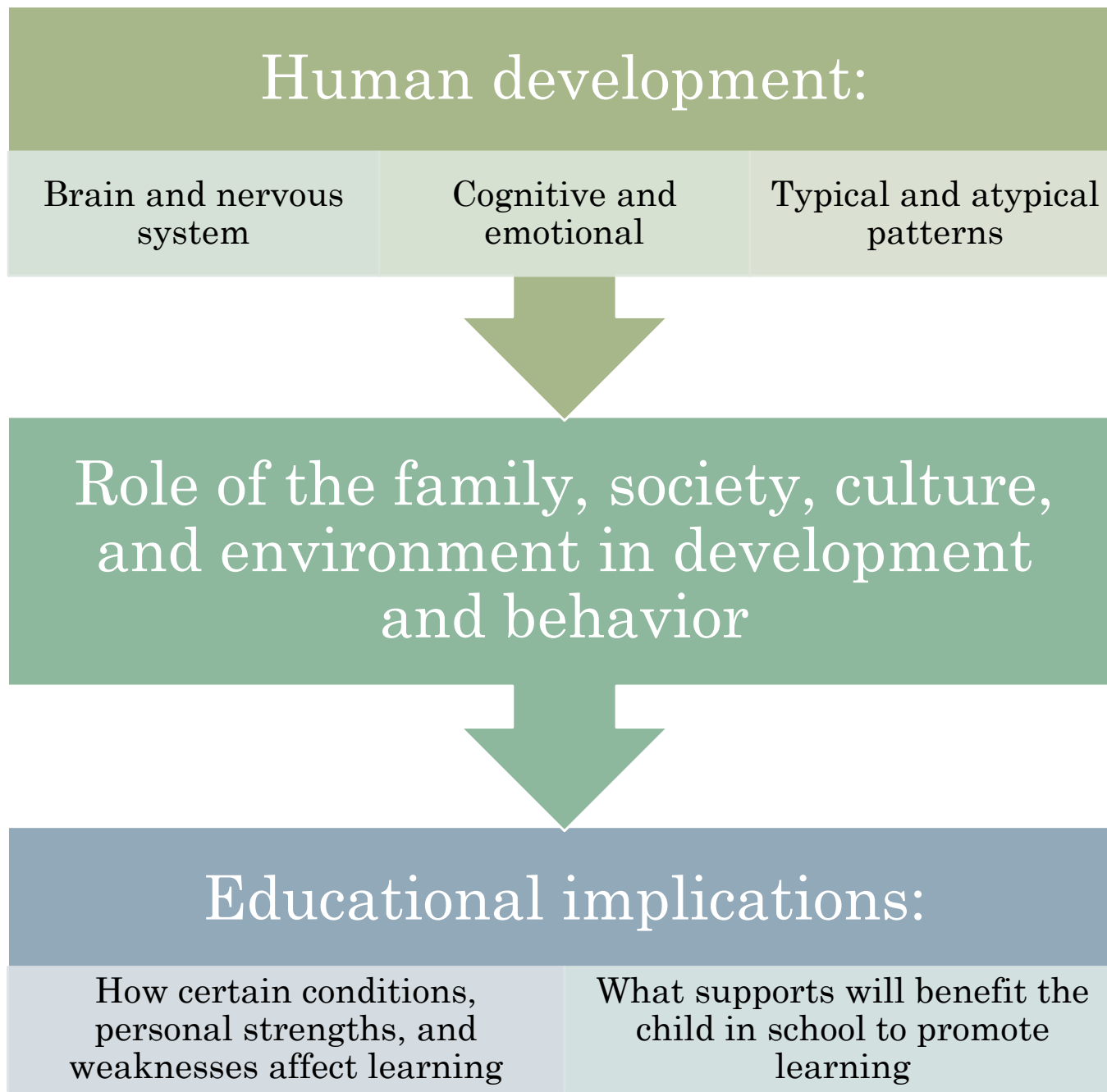
- Emphasis on the study and understanding of brain-behavior relationships

National Academy of Neuropsychology (2001):

- "The study of the relationship between behavior, emotion, and cognition on the one hand, and brain function on the other"

What does a Neuropsychologist know?

Human development:

Brain and nervous system	Cognitive and emotional	Typical and atypical patterns

⬇

Role of the family, society, culture, and environment in development and behavior

⬇

Educational implications:

How certain conditions, personal strengths, and weaknesses affect learning	What supports will benefit the child in school to promote learning

7

Neuropsychological Testing

Helps us better understand the effects of certain conditions, such as autism and attention-deficit/hyperactivity disorder (ADHD) on thinking, learning, behavior, and emotions

Uses standardized tests and observations of a child's behavior to define their pattern of development and personal strengths and weaknesses

Psychological Testing & Psycho-educational Testing

Psychological testing is used to diagnose and identify psychiatric and developmental disorders

- Narrow testing to clarify diagnosis, not necessarily provide insight into treatment

Psychological testing or psycho-educational testing is primarily interested in the score that the child obtains on the tests

- Neuropsychological testing is more interested in **how** the child obtained a specific test score as well as in the pattern of scores across different tests

How is Neuropsychological Testing Different?

- Neuropsychological Testing is more detailed testing that covers many other areas of cognitive and behavioral development
  - More broad and comprehensive
  - Assesses the ENTIRE child, not just their psychological functioning

What is the Neuropsychological Testing Process?

Why Neuropsychological Testing?

To provide an understanding of a child's behavior and learning at home, school, and in the community

To help guide interventions and recommendations for parents, medical professionals, mental health professionals, and teachers

To support the child to function to the best of his/her abilities

Neuropsychological Testing Referral

Not every child who experiences school difficulties or behavioral problems or has autism or another neurological condition requires neuropsychological testing

A neuropsychological assessment may be beneficial if your child:

| Has challenges that are not responding as expected to interventions | Has a medical condition, such as childhood cancer or genetic disorders, that are impacting other areas | Has had a traumatic brain injury or concussion with lasting effects | Has been exposed to teratogenic chemicals, such as alcohol, illicit drugs, radiation, etc. | Is the first in their family to demonstrate these difficulties without a known cause |

What to Expect

Wait List

Intake/Interview

Waiting Again

Testing Day(s)

More Waiting

Feedback

Intake/Interview

Discuss your concerns and what brings you to the evaluation

Bring important medical records: prescriptions, child's 504 Plan or Individualized Educational Program (IEP) from school, history of developmental milestones

Be ready to discuss child's birth history, developmental history, medical history, academic history, social/emotional history, and family history

Be prepared to sign consent/releases

May be asked to complete scales before next appointment

Usually lasts about 45 to 90 minutes; usually with just the parents/caregivers

Discussing the Testing with your Child

Some neuropsychological testing sessions will be completed in one appointment on one day

Some may last for a few hours each day for multiple days

Explain to your child that they will work with a doctor who wants to learn everything they can about your child

This doctor does not give shots!

You can explain to your child that they will do things like play games involving listening, talking, and remembering

Some things will feel like school, and some will be more fun!

Preparing for the Testing

1 Try to make sure your child gets a good night's sleep

2 Encourage a healthy breakfast the day of the testing

3 Give your child their medications unless explicitly told not to do so by the evaluator

4 Have your child bring or wear any eyeglasses or hearing aids and assistive communication devices
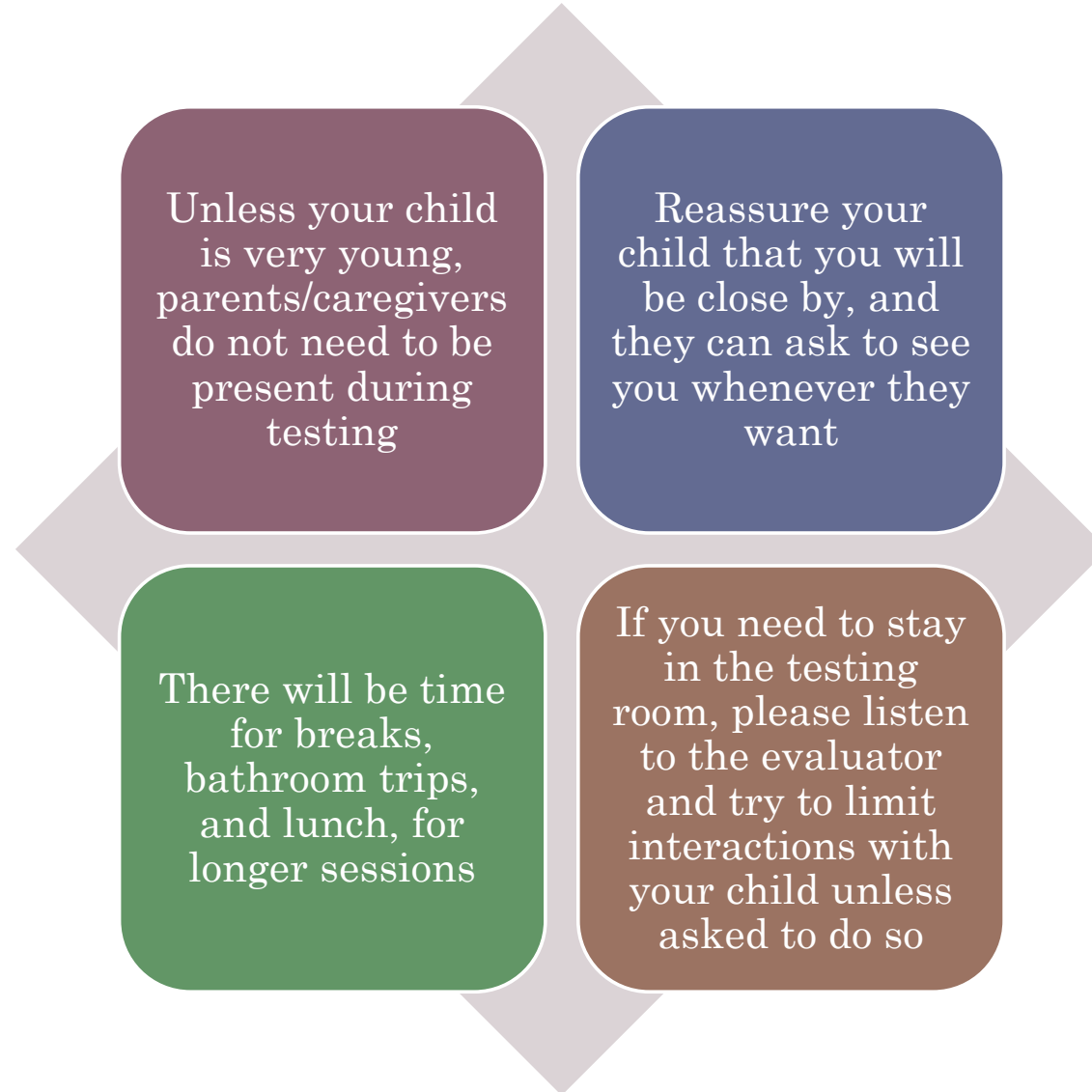
5 Leave siblings at home, if you can

6 Children can bring security objects or small preferred games to use during breaks

7 Pack snacks and something to keep you busy!

17

During the Testing

Unless your child is very young, parents/caregivers do not need to be present during testing

Reassure your child that you will be close by, and they can ask to see you whenever they want

There will be time for breaks, bathroom trips, and lunch, for longer sessions

If you need to stay in the testing room, please listen to the evaluator and try to limit interactions with your child unless asked to do so

What is Testing like for a Child?

Many children enjoy the one-on-one attention, especially if they get to miss school for the day

Most of the tests for children are game-like in nature

Children typically earn stickers, breaks, or other "rewards" for trying their best

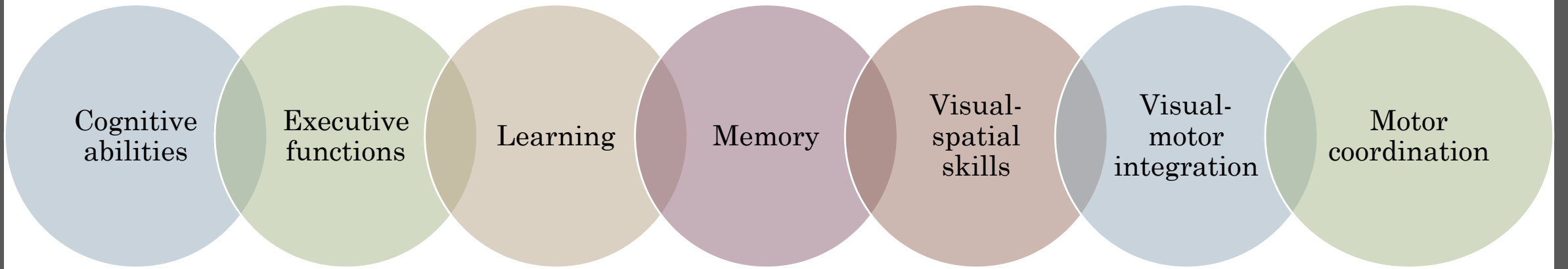Some children become anxious when they cannot figure out a problem

Other children are frustrated by the structured nature of the testing

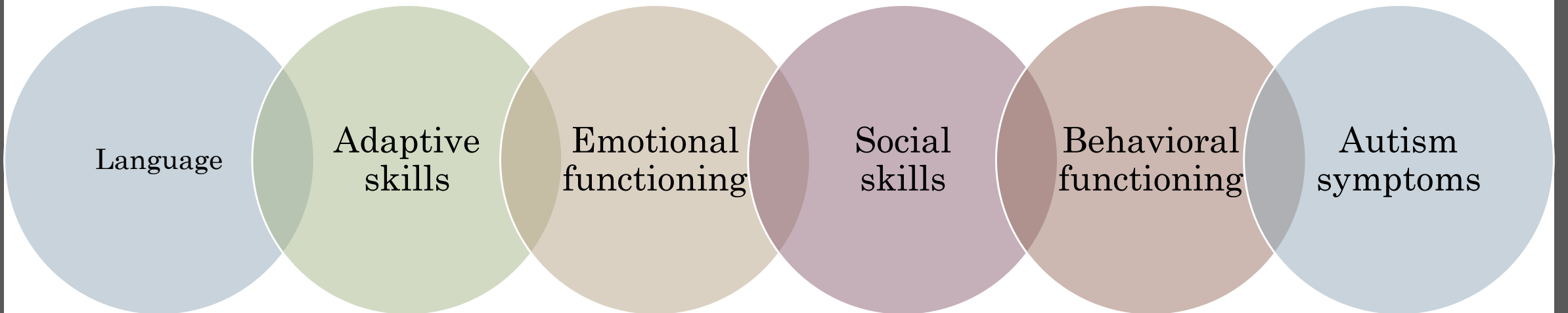Almost all will be very tired at the end of the session!

Test Procedure

The evaluator will start by getting to know your child, through an interview, play, or other interactions

Each evaluation is different and requires different tests and procedures

Cognitive abilities · Executive functions · Learning · Memory · Visual-spatial skills · Visual-motor integration · Motor coordination

Tests May be Selected to Measure:

Language · Adaptive skills · Emotional functioning · Social skills · Behavioral functioning · Autism symptoms

21

Cognitive Tests

Typically, a cognitive or intellectual test is the first test administered

22

Commonly Used Cognitive Tests

Wechsler Intelligence Scale for Children Fifth Edition (WISC-V)

Wechsler Preschool and Primary Scale of Intelligence, Fourth Edition (WPPSI-IV)
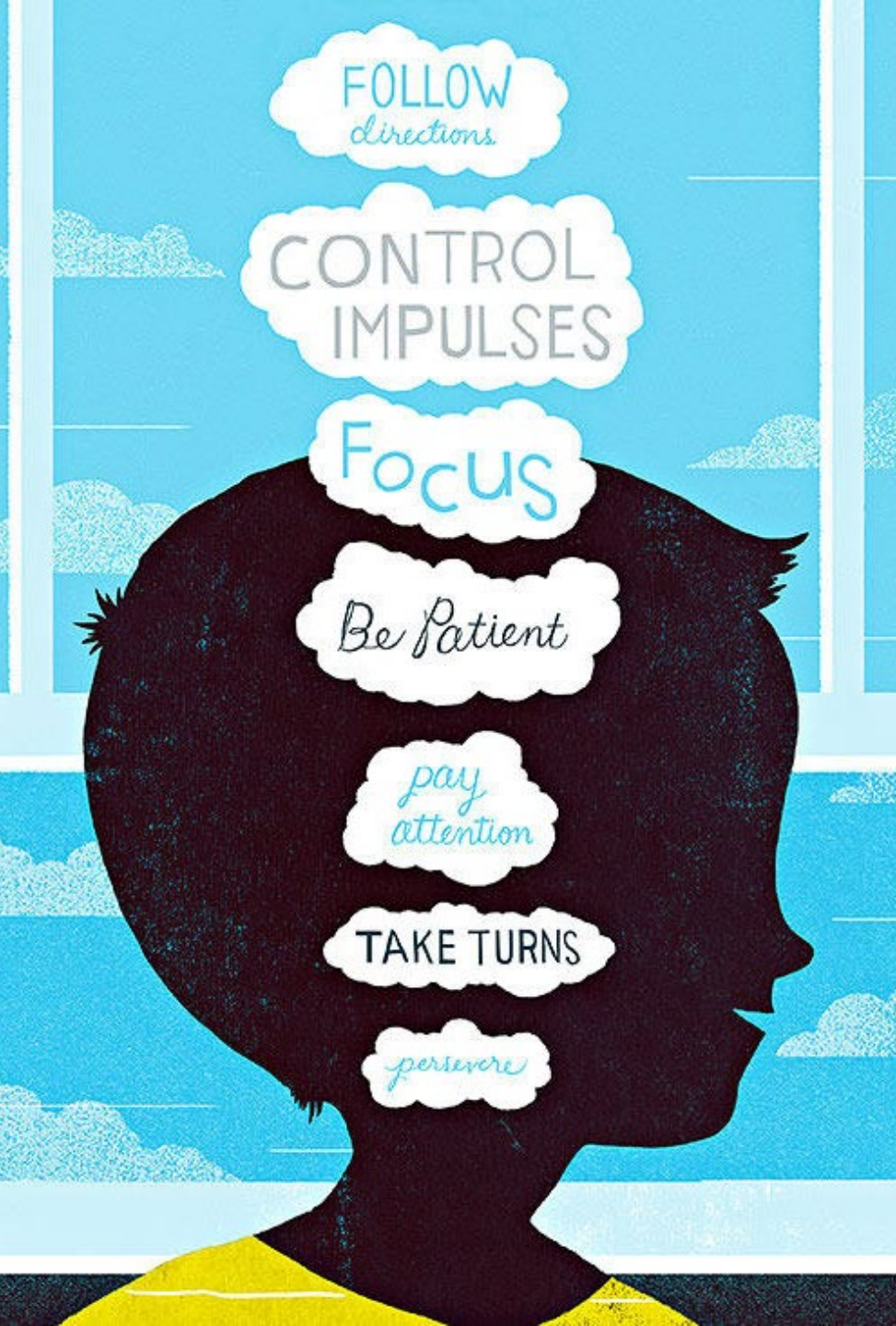
Kaufman Assessment Battery for Children | Second Edition Normative Update (KABC-II NU)

Stanford-Binet Intelligence Scales – Fifth Edition (SB-5)

Differential Ability Scales-II (DAS-II)
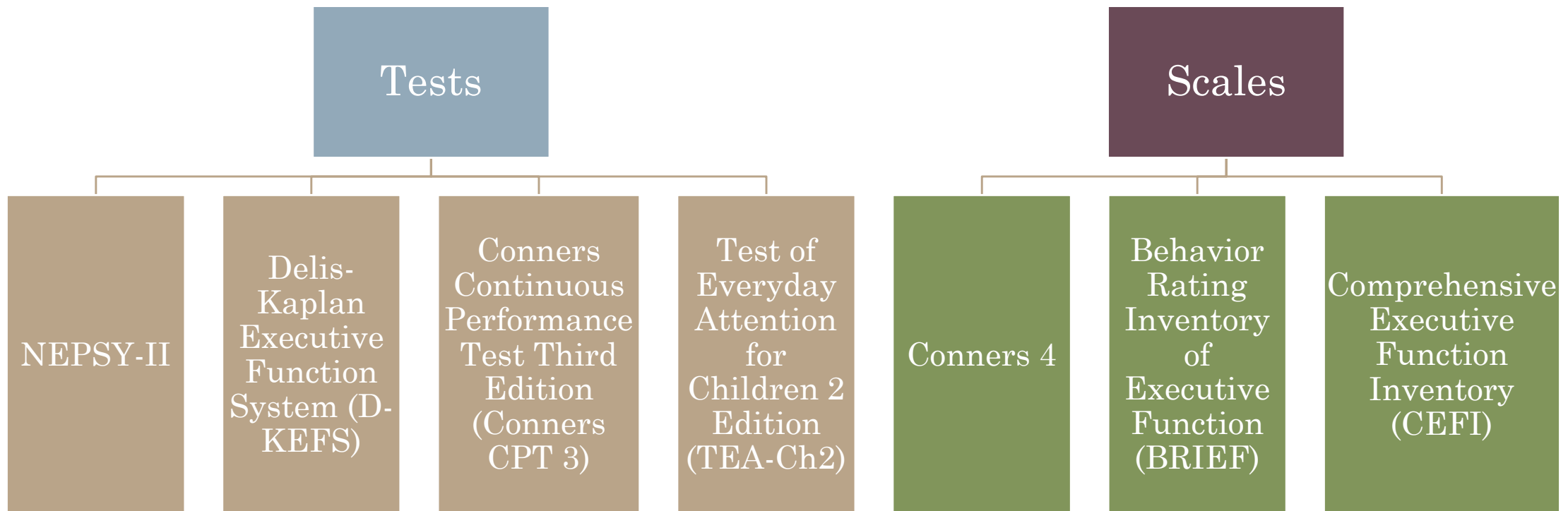
Mullen Scales of Early Learning

Bayley Scales of Infant and Toddler Development | Third Edition (Bayley-III)

Executive Functioning Testing

- Executive functioning refers to one's ability manage their thoughts and actions to achieve goals

- These skills include attention, organization, planning, initiation, follow-through, self-awareness, problem-solving, working memory, emotion regulation, impulse inhibition, etc.

24

Commonly Used Executive Functioning Tests and Scales

Tests

- NEPSY-II
- Delis-Kaplan Executive Function System (D-KEFS)
- Conners Continuous Performance Test Third Edition (Conners CPT 3)
- Test of Everyday Attention for Children 2 Edition (TEA-Ch2)

Scales

- Conners 4
- Behavior Rating Inventory of Executive Function (BRIEF)
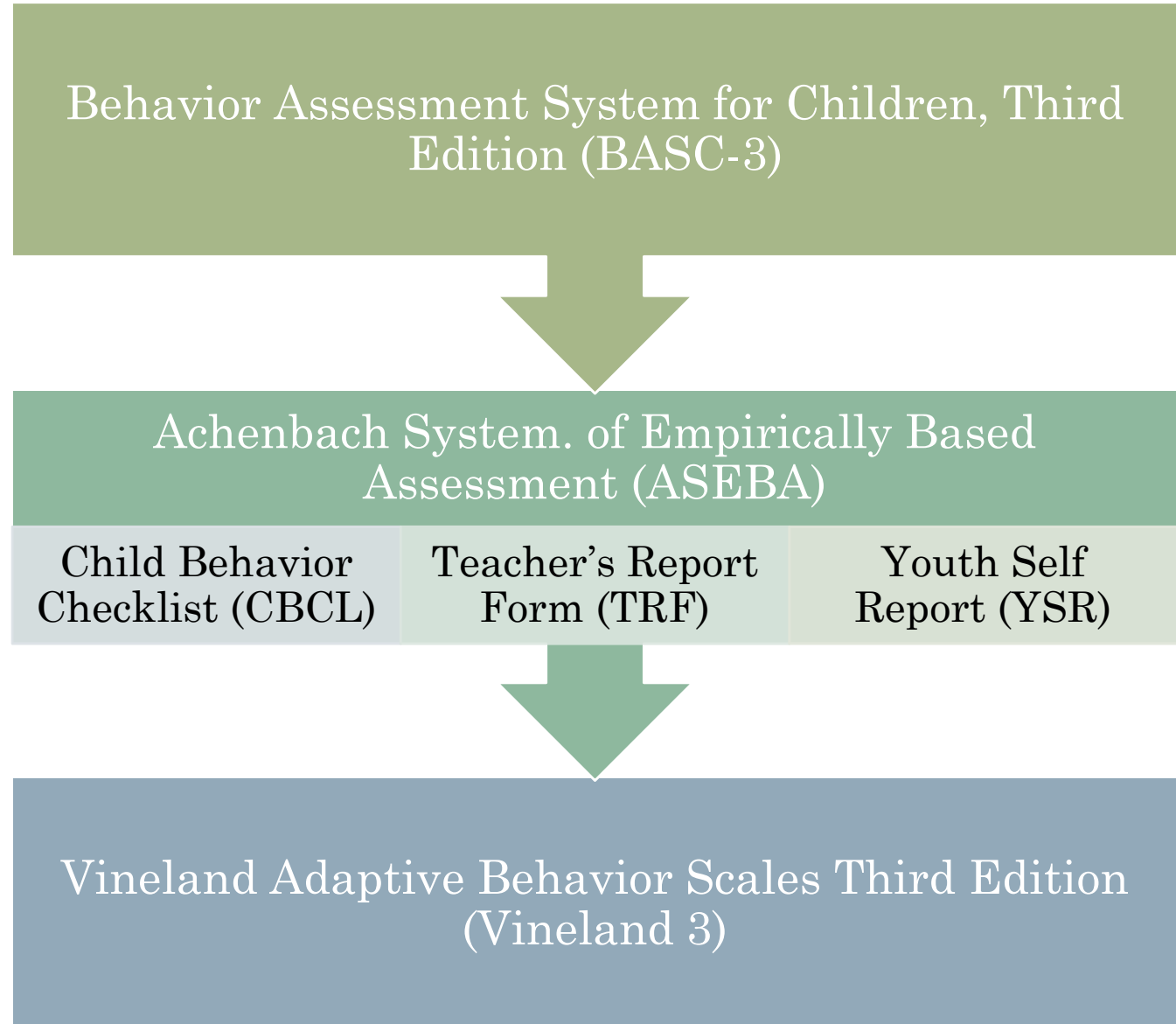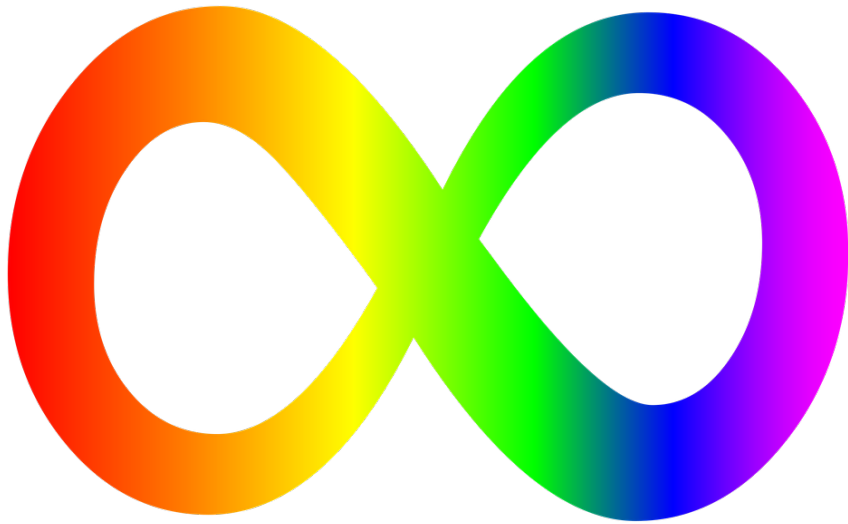- Comprehensive Executive Function Inventory (CEFI)

Other Rating Scales

- Rating scales help to provide a picture of how the child and others perceive their functioning

- These scales can measure executive functioning, social functioning, behavioral functioning, adaptive functioning, and emotional functioning

26

Commonly Used Rating Scales

Behavior Assessment System for Children, Third Edition (BASC-3)

Achenbach System. of Empirically Based Assessment (ASEBA)

| Child Behavior Checklist (CBCL) | Teacher's Report Form (TRF) | Youth Self Report (YSR) |

Vineland Adaptive Behavior Scales Third Edition (Vineland 3)

Autism Functioning

When autism is a possibly diagnosis or the child presents with developmental and/or social delays, the likelihood of autism may be evaluated

Both interactive tests and scales can be used to assess for autism

Commonly Used Autism Measures

Tests
- Autism Diagnostic Observation Schedule, Second Edition (ADOS-2)
- Screening Tool for Autism in Toddlers and Young Children (STAT)

Scales completed by the evaluator
- Autism Diagnostic Interview-Revised (ADI-R)
- Monteiro Interview Guidelines for Diagnosing the Autism Spectrum, Second Edition (MIGDAS-2)
- Childhood Autism Rating Scale, Second Edition (CARS-2)

Scales completed by the parent/teacher/caregiver
- Gilliam Autism Rating Scale, Third Edition (GARS-3)
- Autism Spectrum Rating Scales (ASRS)
- Ages and Stages Questionnaire (ASQ)

What can I learn from a Neuropsychological Report?

Parts of a Neuropsychological Report

- Demographic Information

- Reason for Referral and Concerns

- Background Information
  - Family context, birth and development, educational history, medical history, social history, emotional and behavioral functioning, previous testing and interventions, information from teachers/provider/caregivers

- Behavioral Observations and Testing Validity

- List of Tests Administered

- Description of Test Performance and Results

- Summary, Conclusion, and Diagnostic Impressions
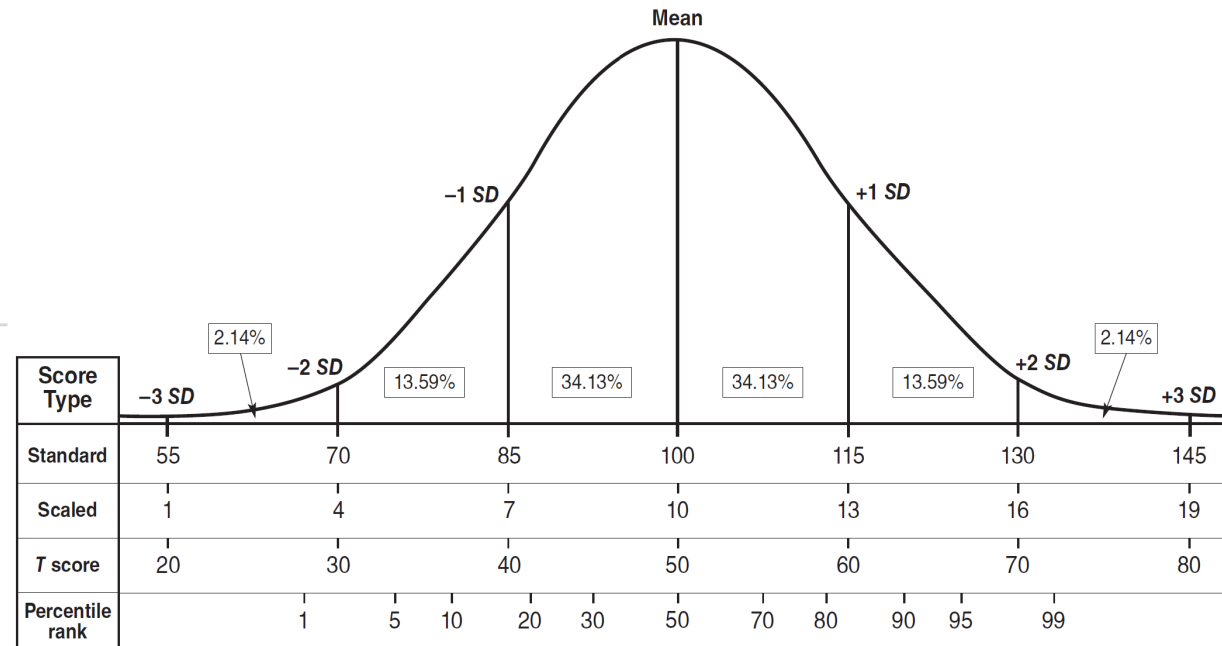
- Recommendations

Test Results

Typically presented in two ways:

Narrative or written description of the child's performance, both compared to their same-aged peers and in detail of their actions and process through the testing

Visually in a table or on a graph

Interpretation of Evaluation Results

Score Type	−3 SD	−2 SD		−1 SD	Mean	+1 SD	+2 SD	+3 SD
Standard	55	70		85	100	115	130	145
Scaled	1	4		7	10	13	16	19
T score	20	30		40	50	60	70	80
Percentile rank		1	5 10	20 30	50	70 80	90 95 99	

2.14%   13.59%   34.13%   34.13%   13.59%   2.14%

Summary, Conclusion, and Diagnostic Impressions

Provides broad description of areas of personal strengths and weaknesses

Demonstrated how those strengths and areas of growth may present in the child's day-to-day life, especially in school

Provides diagnoses and explains why other possible diagnoses were ruled out

Indicates areas of risk, such as academically, socially, in the community

Recommendations

- Most useful part of the entire process
- Usually broken up by area or individuals identified

Family

Medical

School

Treatment providers

Community providers

Referrals

Resources

34

Sample Recommendations

Family:

- Suggestions for structure in the home to promote expected behaviors and discourage unexpected behaviors

Medical:

- Possible medication management or referrals to medial providers, such as neurologists, geneticists, developmental pediatricians, etc.

School:

- Referral for possible special education testing or consideration for a 504 Plan
- Recommendations for educational programming and accommodations, such as preferential seating, prompting, extended time, etc.

Sample Recommendations

Treatment providers:

- Suggestions for treatment, such as psychotherapy, speech-language evaluation, occupational therapy, behavioral therapy, feeding therapy, etc.

Community providers:

- Recommendations for mentors, peer support and social groups, etc.

Resources:

- Recommendations for books, websites, TED Talks, support groups, grassroots organizations, advocacy groups, etc.

Questions??

Christen Fanelli, Ph.D.

Cfanelli.9@gmail.com