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Autism and Bipolar Disorder

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Disclosures

Dr. Janet Wozniak receives research support from the Baszucki Brain Research Fund, PCORI and Demarest Lloyd, Jr. Foundation. In the past, Dr. Wozniak has received research support, consultation fees or speaker's fees from Eli Lilly, Janssen, Johnson and Johnson, McNeil, Merck/Schering-Plough, the National Institute of Mental Health (NIMH) of the National Institutes of Health (NIH), Pfizer, and Shire. She is the author of the book, "*Is Your Child Bipolar*" published May 2008, Bantam Books.

Her spouse receives royalties from UpToDate; consultation fees from Emalex, Noctrix, Disc Medicine, Avadel, HALEO, OrbiMed, and CVS; and research support from Merck, NeuroMetrix, American Regent, NIH, NIMH, the RLS Foundation, and the Baszucki Brain Research Fund. In the past, he has received honoraria, royalties, research support, consultation fees or speaker's fees from: Otsuka, Cambridge University Press, Advance Medical, Arbor Pharmaceuticals, Axon Labs, Boehringer-Ingelheim, Cantor Colburn, Covance, Cephalon, Eli Lilly, FlexPharma, GlaxoSmithKline, Impax, Jazz Pharmaceuticals, King, Luitpold, Novartis, Neurogen, Novadel Pharma, Pfizer, Sanofi-Aventis, Sepracor, Sunovion, Takeda, UCB (Schwarz) Pharma, Wyeth, Xenoport, Zeo.

Overview:
This presentation is about the comorbidity of bipolar disorder and autism and will discuss an approach to understanding emotional dysregulation in autism

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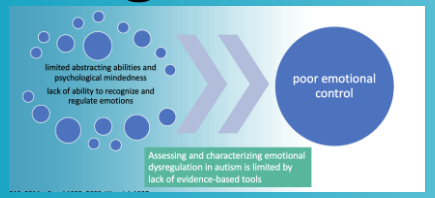
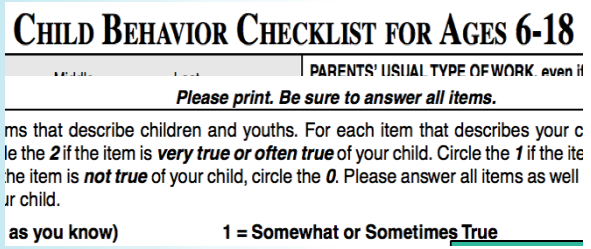


Youth with autism are often referred due to emotional dysregulation.

The CBCL can delineate different levels of emotional dysregulation in autism

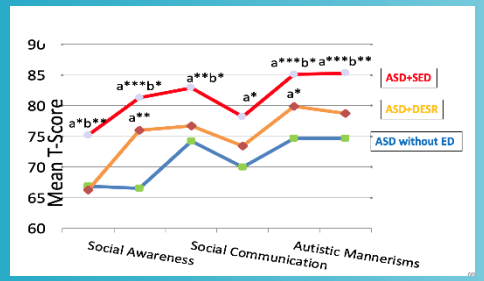

CHILD BEHAVIOR CHECKLIST FOR AGES 6-18

PARENTS' USUAL TYPE OF WORK, even if

Please print. Be sure to answer all items.

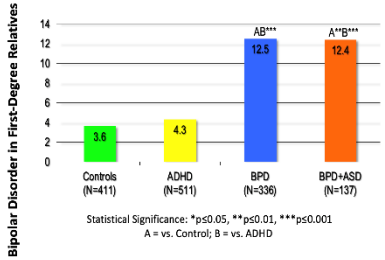
ms that describe children and youths. For each item that describes your c
le the ***2*** if the item is ***very true or often true*** of your child. Circle the ***1*** if the ite
he item is ***not true*** of your child, circle the ***0***. Please answer all items as well
ur child.

as you know) 1 = Somewhat or Sometimes True



There are clinically distinct subytpes of ASD with and without deficient emotional self regulation and severe emotional dysregulation

Comorbidity analysis:
Autism + ADHD is common and associated with more severe emotional dysregulation than ADHD.
BPD comorbid with autism is a bona fide comorbidity and responds to SGA treatment similar to bipolar without autism.



Emotional Dysregulation is not a diagnostic feature of autism

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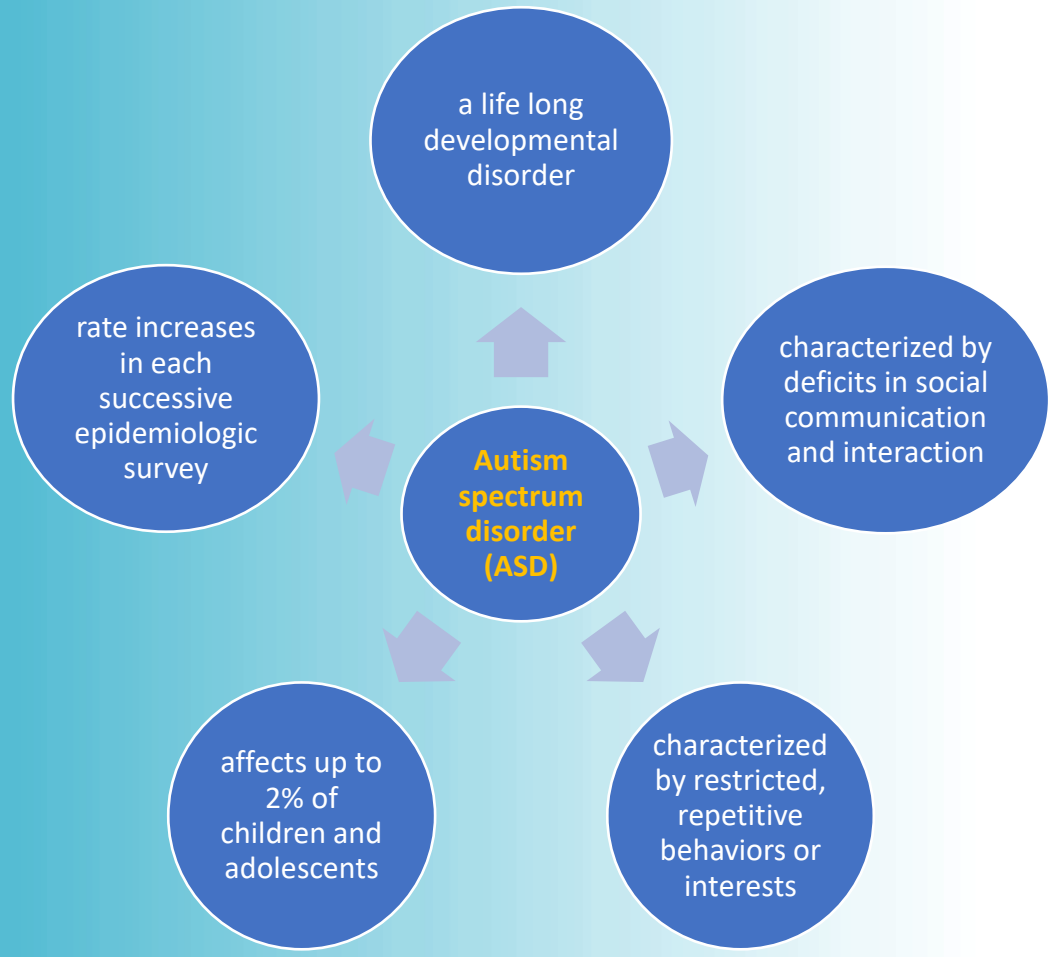
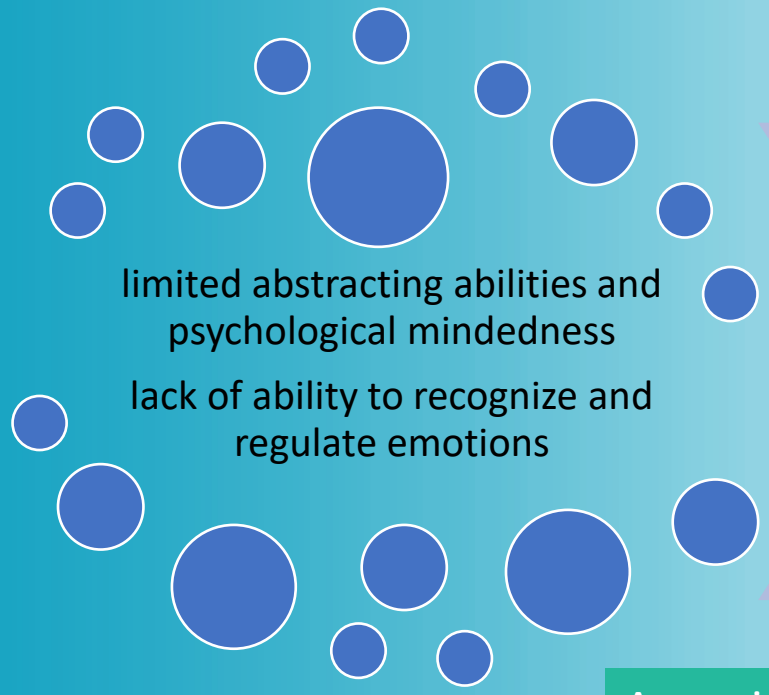


American Psychiatric Association 2000; Blumberg 2013

Autism often presents with emotional instability



poor emotional control

Assessing and characterizing emotional dysregulation in autism is limited by lack of evidence-based tools

Joshi 2010, 2014a; Sverd 1995, 2003; Wozniak 1997

Autism accounts for 2-14% of psychiatry outpatient referrals, often due to emotional dysregulation

- irritability
- aggression
- high rates of comorbidity
- anxiety
- depression

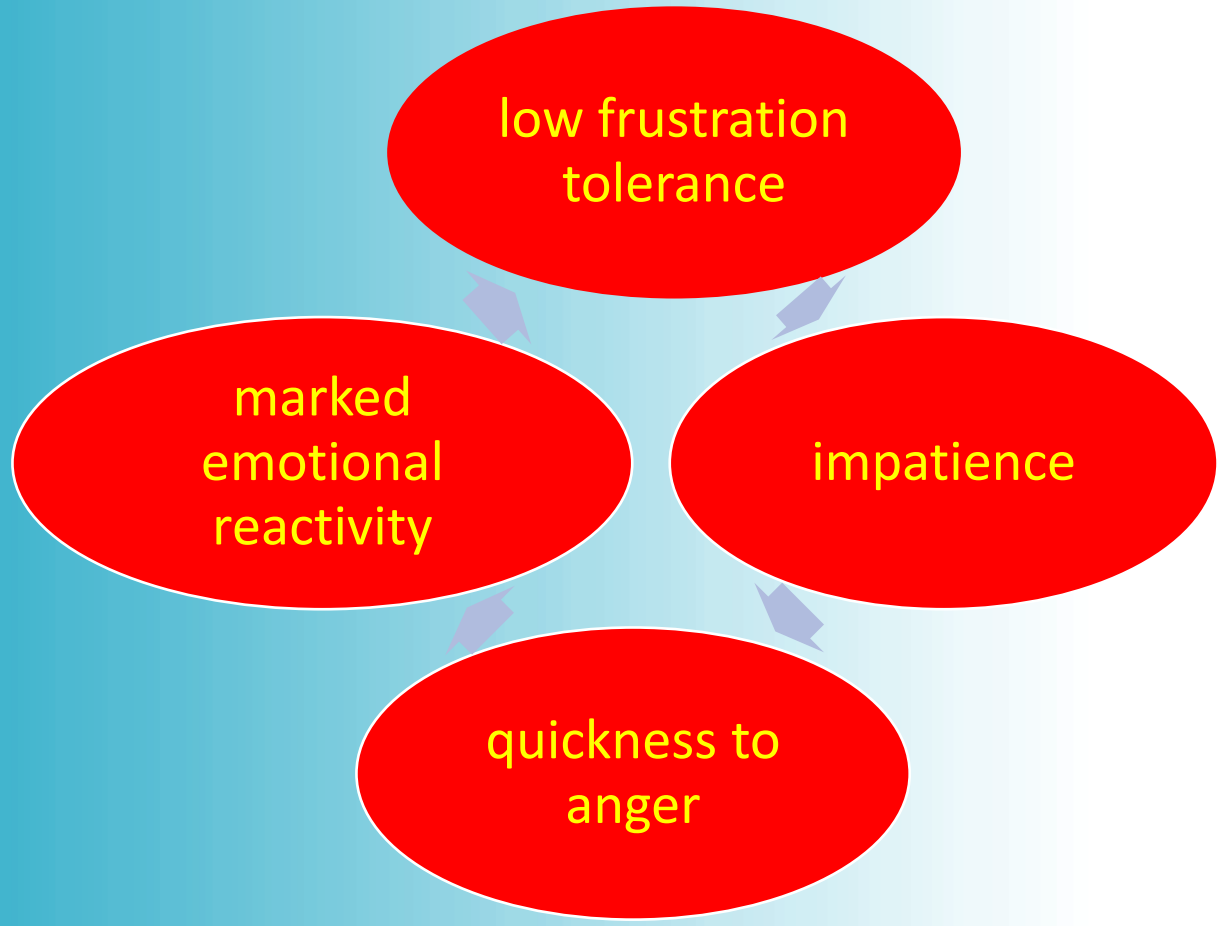
→ PSYCHIATRIC REFERRAL → POOR FUNCTIONING

Due to the frequency of emotional problems, questions exist as to whether emotional dysregulation is intrinsic to autism or due to comorbidity with other disorders

Recent reports suggest high prevalence of emotional dysregulation (ED) in individuals with ASD, varying from 50% to more than 60%

McCracken 2002; RUPP 2005; Gadow 2004; Vickerstaff 2007; Sterling 2008; Mazefsy 2014; Samson 2014

Emotional dysregulation is a form of poor self-regulation



Our MGH group has published extensively on the utility of the CBCL in the assessment of *ADHD youth*

The CBCL can identify levels of emotional dysregulation in ADHD youth

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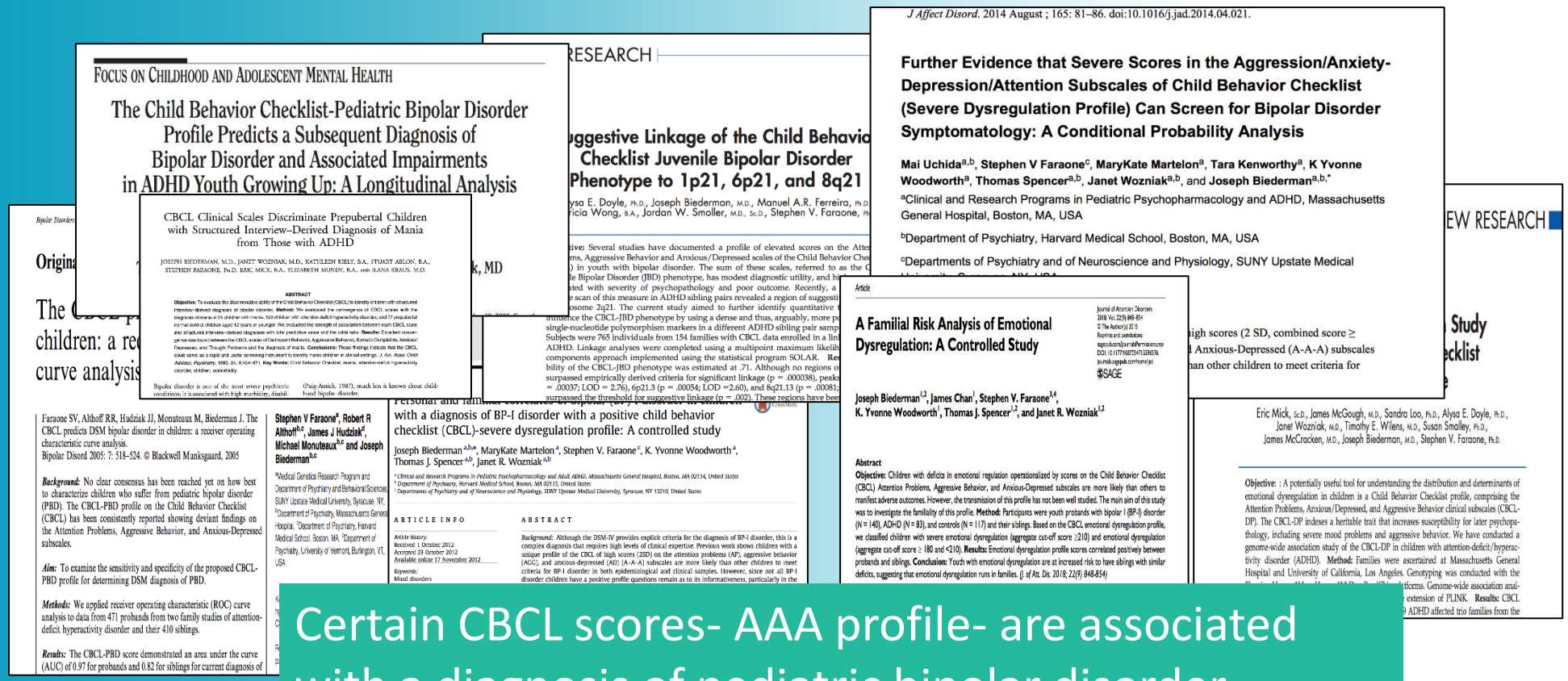
Our MGH group has published extensively on the utility of the CBCL in identifying *bipolar disorder* in youth



Certain CBCL scores- AAA profile- are associated with a diagnosis of pediatric bipolar disorder

The Child Behavior Checklist (CBCL) is a parent completed rating scale that is easy to administer and score

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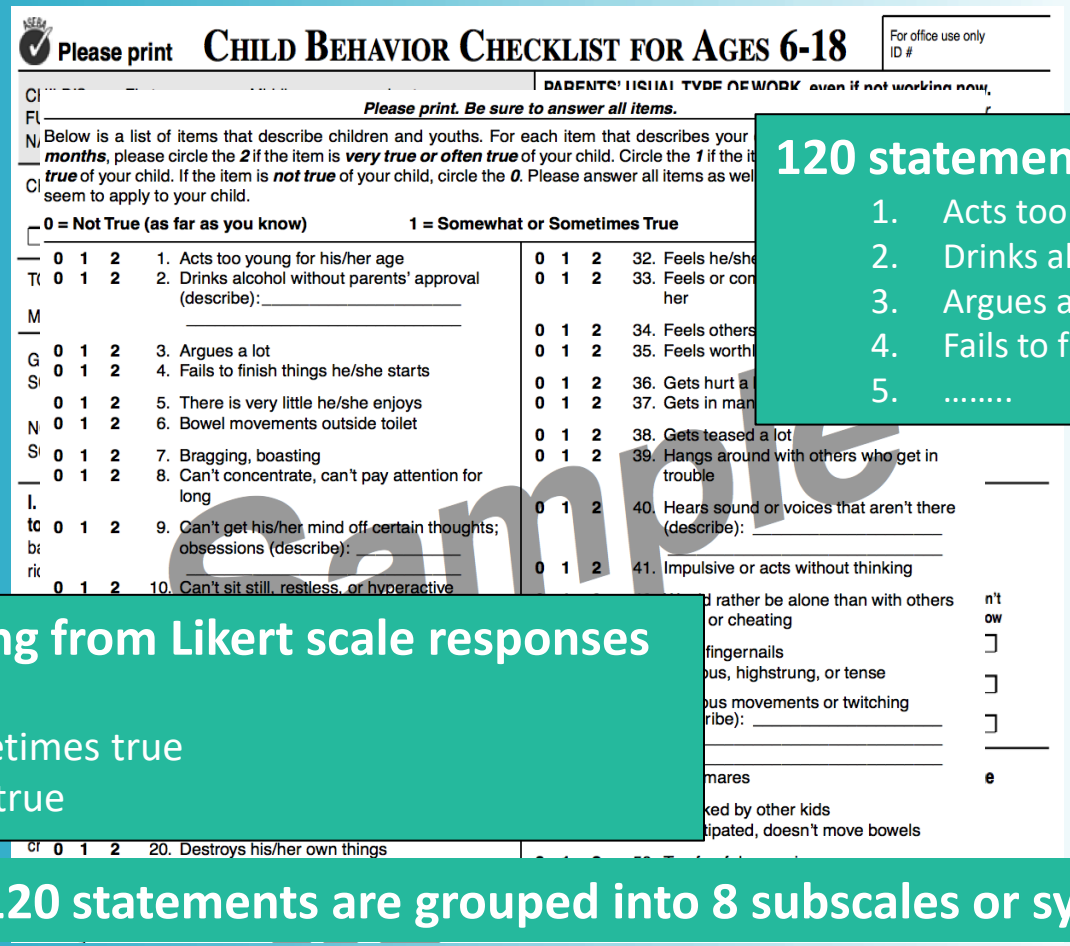


Please print **CHILD BEHAVIOR CHECKLIST FOR AGES 6-18**

For office use only
ID #

Please print. Be sure to answer all items.

Below is a list of items that describe children and youths. For each item that describes your ***months***, please circle the ***2*** if the item is ***very true or often true*** of your child. Circle the ***1*** if the it ***true*** of your child. If the item is ***not true*** of your child, circle the ***0***. Please answer all items as wel seem to apply to your child.

0 = Not True (as far as you know) **1 = Somewhat or Sometimes True**

0 1 2 1. Acts too young for his/her age
0 1 2 2. Drinks alcohol without parents' approval (describe):_____
0 1 2 3. Argues a lot
0 1 2 4. Fails to finish things he/she starts
0 1 2 5. There is very little he/she enjoys
0 1 2 6. Bowel movements outside toilet
0 1 2 7. Bragging, boasting
0 1 2 8. Can't concentrate, can't pay attention for long
0 1 2 9. Can't get his/her mind off certain thoughts; obsessions (describe): _____
0 1 2 10. Can't sit still, restless, or hyperactive
0 1 2 20. Destroys his/her own things

0 1 2 32. Feels he/she
0 1 2 33. Feels or con her
0 1 2 34. Feels others
0 1 2 35. Feels worthl
0 1 2 36. Gets hurt a
0 1 2 37. Gets in man
0 1 2 38. Gets teased a lot
0 1 2 39. Hangs around with others who get in trouble
0 1 2 40. Hears sound or voices that aren't there (describe): _____
0 1 2 41. Impulsive or acts without thinking

d rather be alone than with others
or cheating
fingernails
ous, highstrung, or tense
ous movements or twitching
ribe): _____
mares
ked by other kids
tipated, doesn't move bowels

Sample

120 statements about the child's behavior

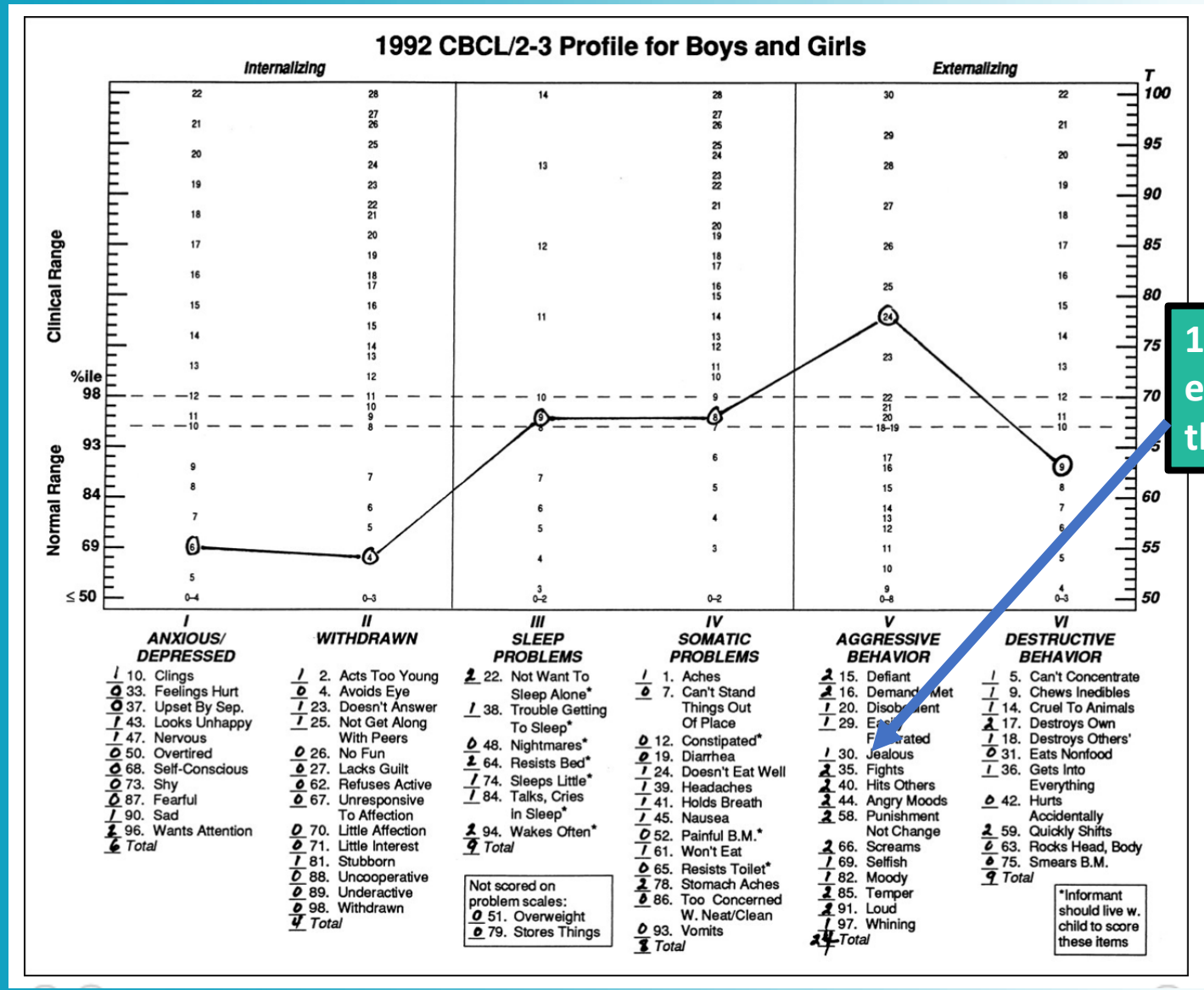
1. Acts too young for his/her age
2. Drinks alcohol without parents approval
3. Argues a lot
4. Fails to finish things he/she starts
5. ……..

Parents score choosing from Likert scale responses

0=not true
1=somewhat or sometimes true
2=Very true or often true

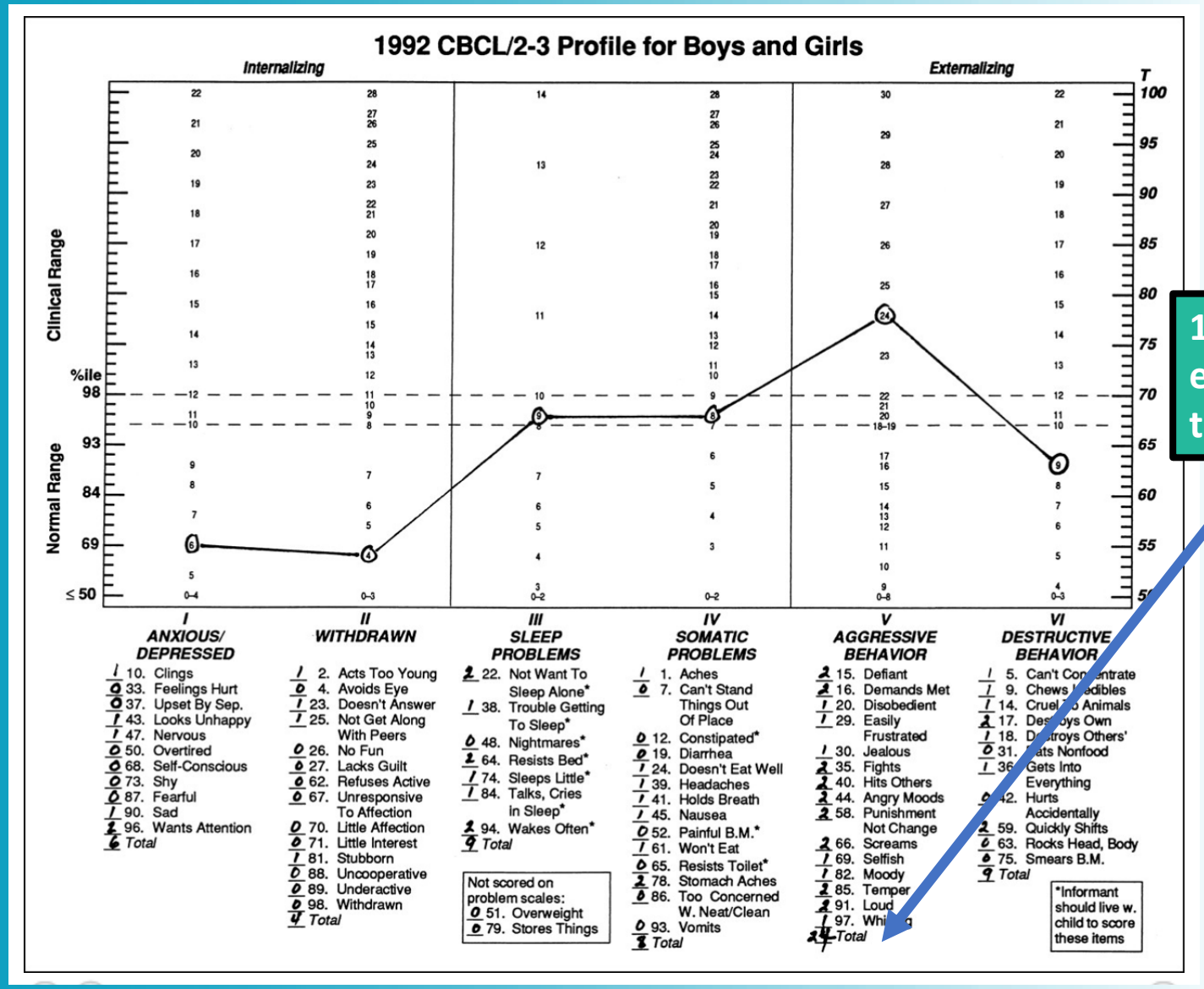
The 120 statements are grouped into 8 subscales or syndrome scales

How to score a CBCL



1. Enter all the scores (0, 1, 2) for each of the 120 questions under the different subscale groups

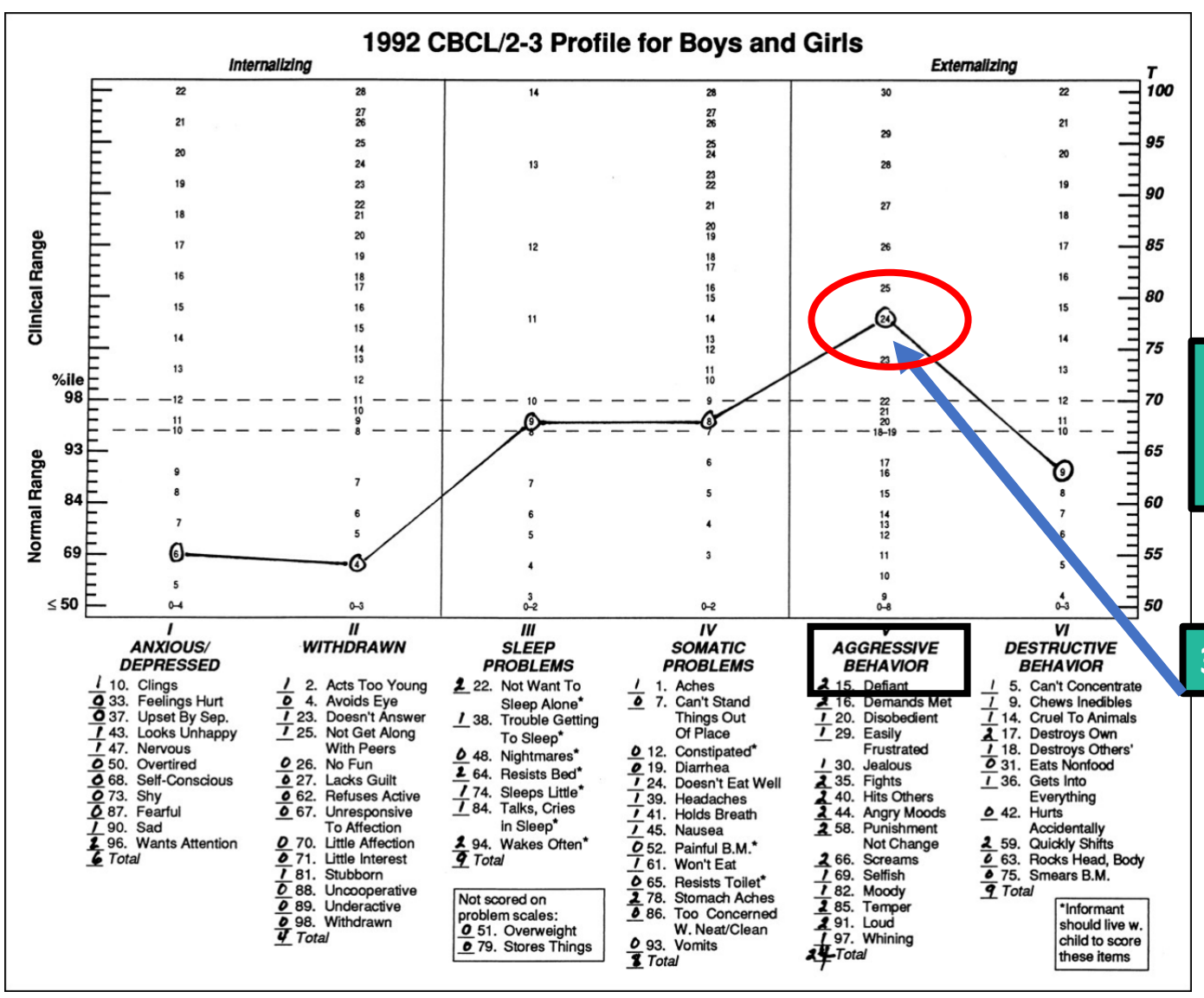
How to score a CBCL



1. Enter all the scores (0, 1, 2) for each of the 120 questions under the different subscale groups

2. Total the score for each subscale

How to score a CBCL



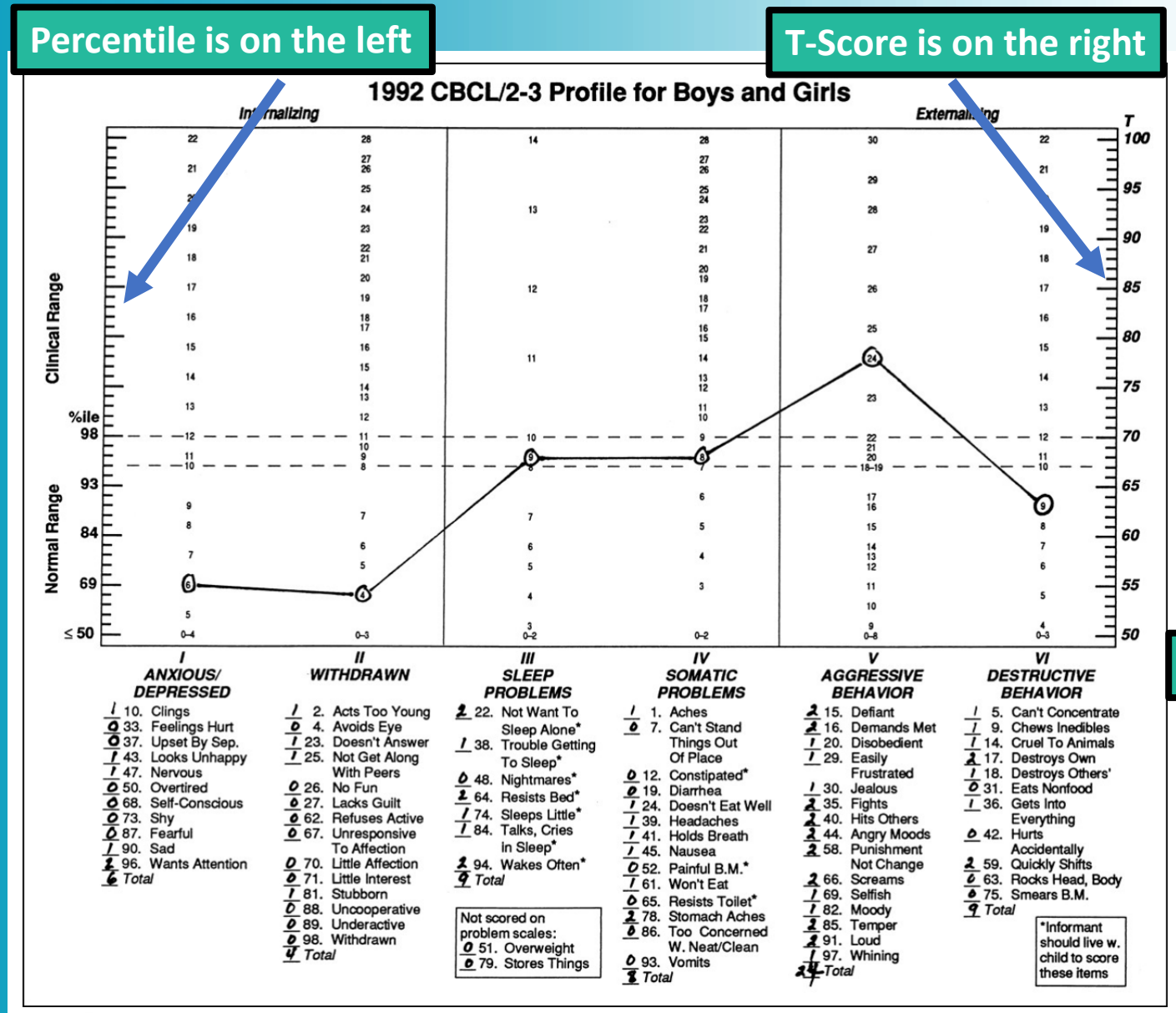
1. Enter all the scores (0, 1, 2) for each of the 120 questions under the different subscale groups

2. Total the score for each subscale

3. Plot the total score on the scale above

Percentile is on the left

T-Score is on the right



1. Enter all the scores (0, 1, 2) for each of the 120 questions under the different subscale groups

2. Total the score for each subscale

3. Plot the total score on the scale above

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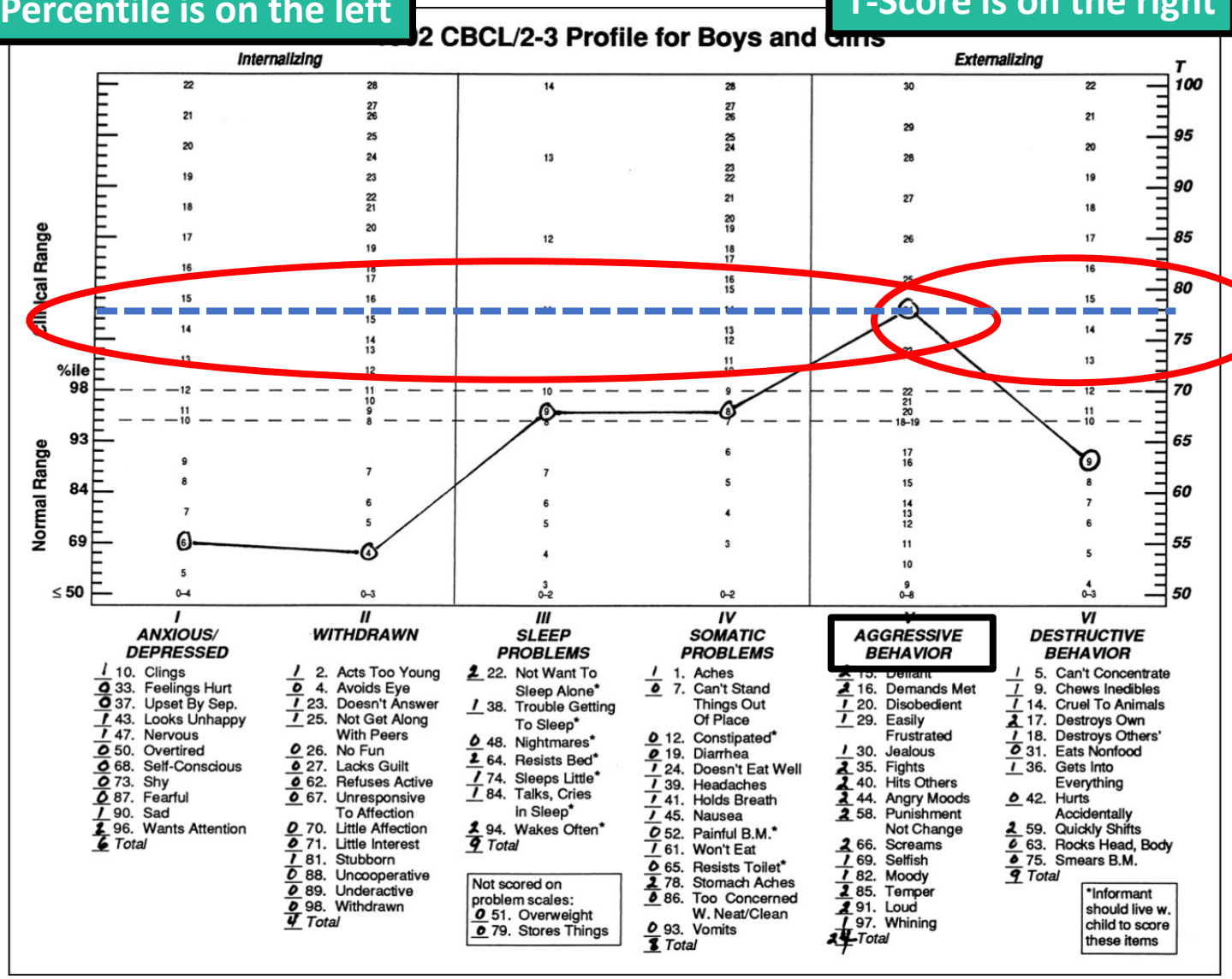
Percentile is on the left

T-Score is on the right

92nd percentile

T-Score=78



The CBCL uses a normative sample to create standard scores. T

These compare the raw score to what would be typical compared to responses for youths of the same gender and similar age.

The standard scores are scaled so that 50 is average for the youth's age and gender, with a standard deviation of 10 points.

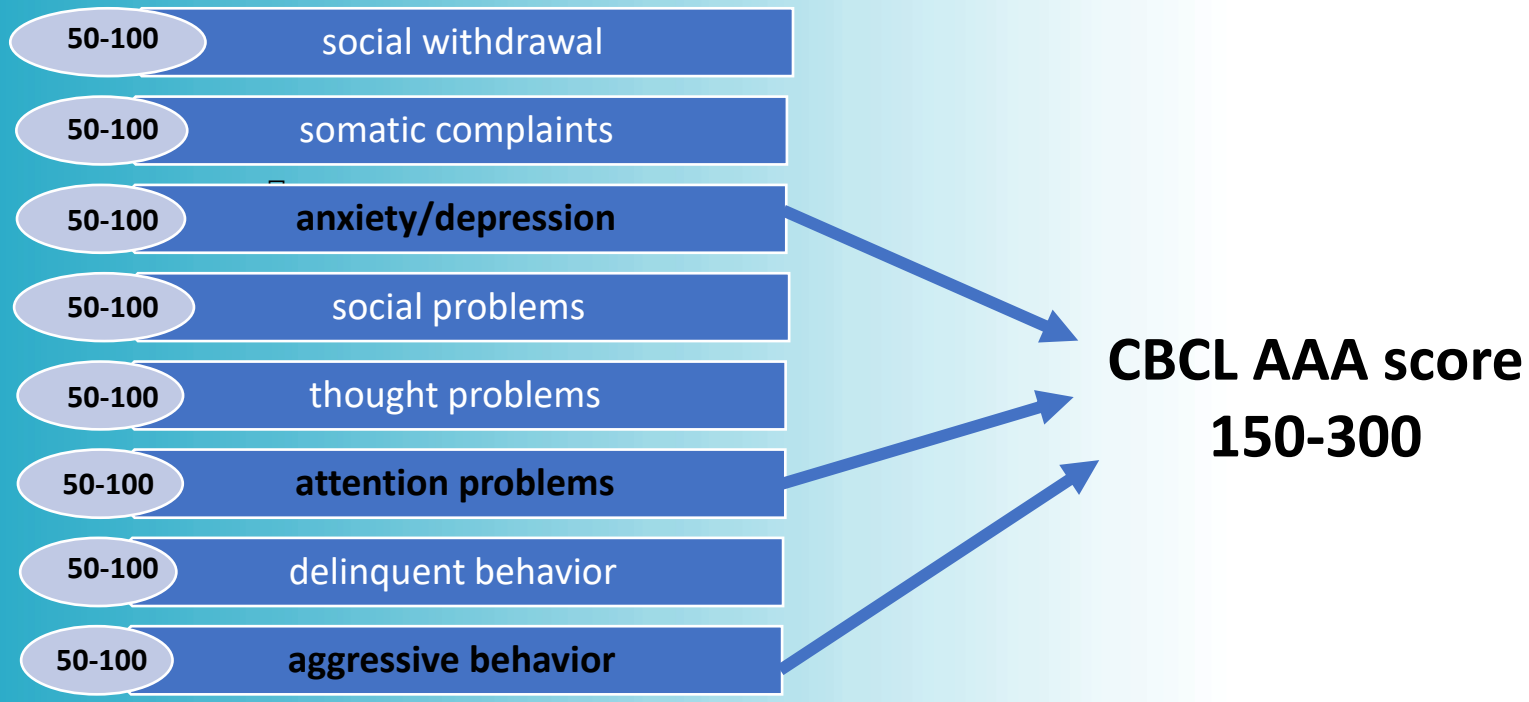
The Child Behavior Checklist has 8 clinical subscales

The 120 statements are grouped into 8 subscales or syndrome scales

Scores are converted to T-Scores for each subscale 50-100

A T-score of 60 is one standard deviation from normal

A T-score of 70 is two standard deviations from normal



We operationalized profiles of Emotional Dysregulation based on the composite T-scores of three CBCL subscales

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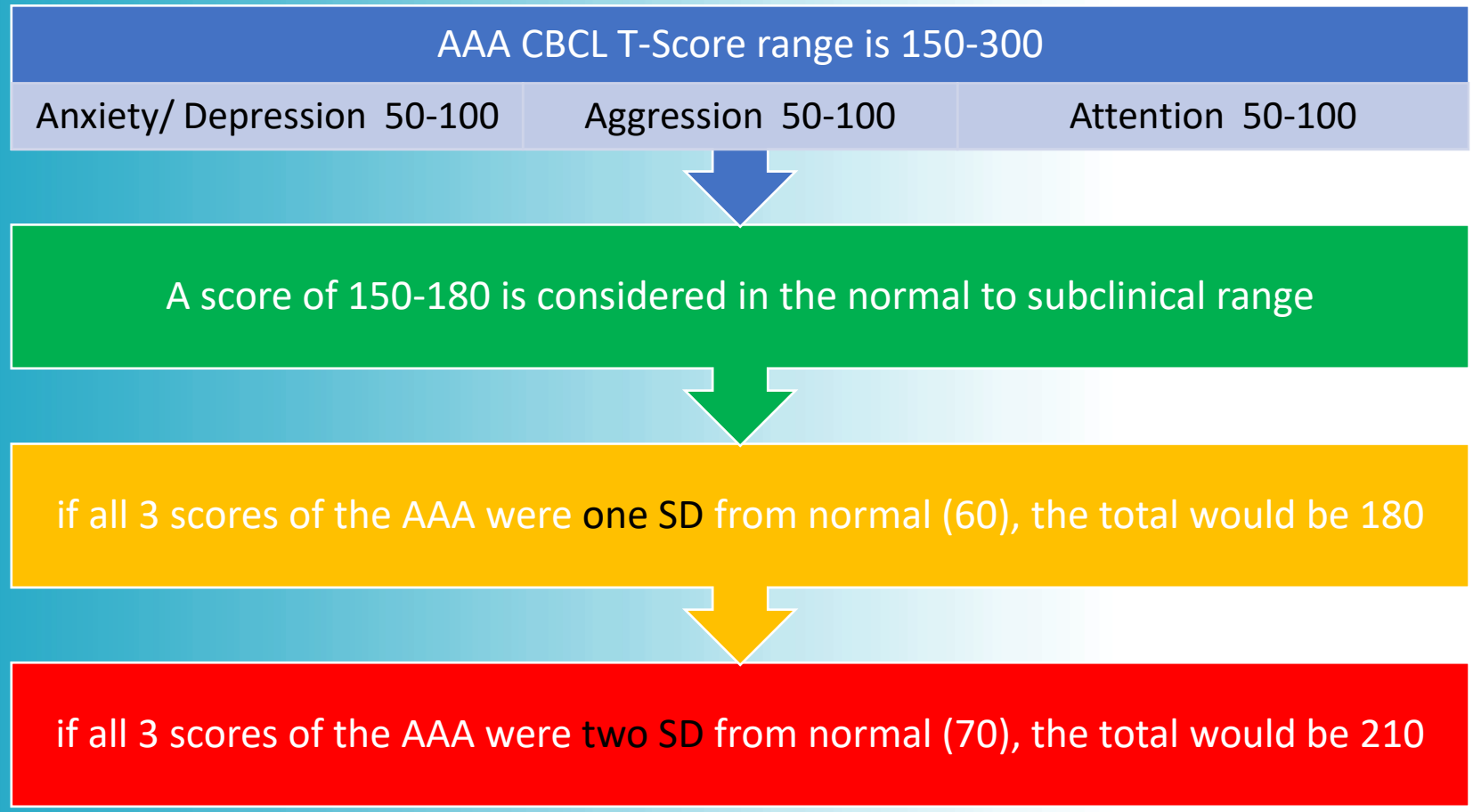

Emotional Dysregulation (ED) can be characterized by DESR (CBCL Score 180-210) which is less severe than SED (CBCL Score >210)

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DESR Deficient Emotional Self Regulation

composite T-score AAA between 1 and 2 SD from normal

>180	<210

SED Severe Emotional Dysregulation

composite T-score AAA greater than 2 SDs from normal

greater than 210

Hypotheses and objectives

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CBCL can identify different levels of emotional dysregulation

Youth with autism are often referred due to emotional issues

We studied ASD youth with different levels of emotional dysregulation

We hypothesized:

The two CBCL-ED profiles (DESR and SED) in youth with ASD would identify associated patterns of clinical correlates

Our first main objective:

To assess prevalence and severity of Emotional Dysregulation (ED) in psychiatrically referred youth with ASD

Our second main objective:

To investigate whether the two severity levels of CBCL profiles for ED can help distinguish clinically distinct levels of deficits in ASD

Journal of Autism and Developmental Disorders
https://doi.org/10.1007/s10803-018-3542-9

ORIGINAL PAPER

High Risk for Severe Emotional Dysregulation in Psychiatrically Referred Youth with Autism Spectrum Disorder: A Controlled Study

Gagan Joshi[1,2,3] · Janet Wozniak[1,2,3] · Maura Fitzgerald[1,2] · Stephen Faraone[4,5] · Ronna Fried[1,2,3] · Maribel Galdo[1,2] · Stephannie L. Furtak[1,2] · Kristina Conroy[1,2] · J. Ryan Kilcullen[1,2] · Abigail Belser[1,2] · Joseph Biederman[1,2,3]

Abstract
To assess prevalence and severity of emotional dysregulation (ED) in psychiatrically referred youth with autism spectrum disorder (ASD). ASD youth (N = 123) were compared to youth with attention-deficit/hyperactivity disorder (ADHD) and controls. The majority of psychiatrically referred youth with ASD had positive Child Behavior Checklist-ED (CBCL-ED) profile that was significantly higher than in youth with ADHD (82 vs. 53%; $p < 0.001$). The severe emotional dysregulation (SED) profile was significantly greater in ASD youth than ADHD (44 vs. 15%; $p < 0.001$). In the presence of SED profile ASD youth suffered from greater severity of autism, associated psychopathology, and psychosocial dysfunction. Greater than expected prevalence of SED in psychiatrically referred youth with ASD that identifies distinct clinical correlates associated with severe morbidity and dysfunction.

Keywords Autism spectrum disorder · Emotional dysregulation · CBCL · Youth

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Joshi 2018

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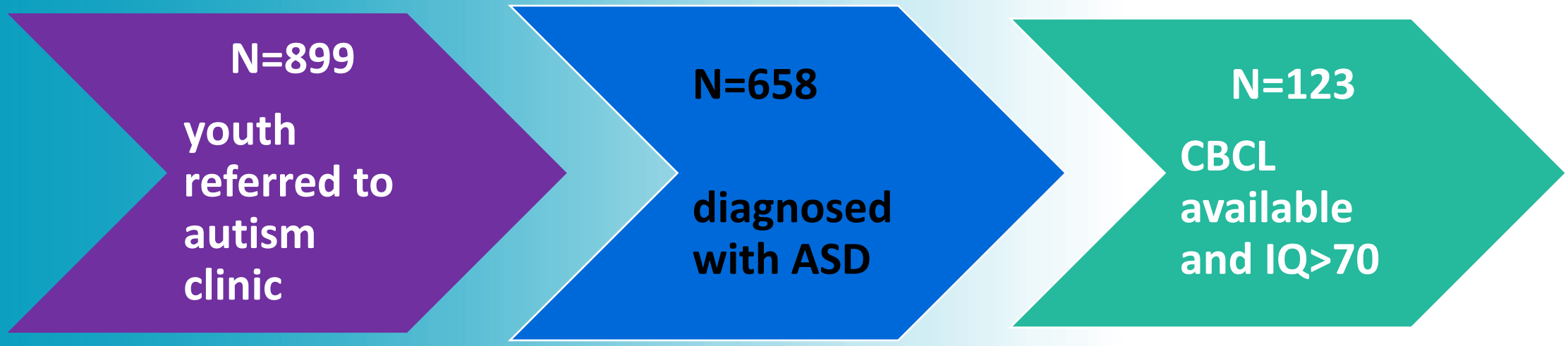
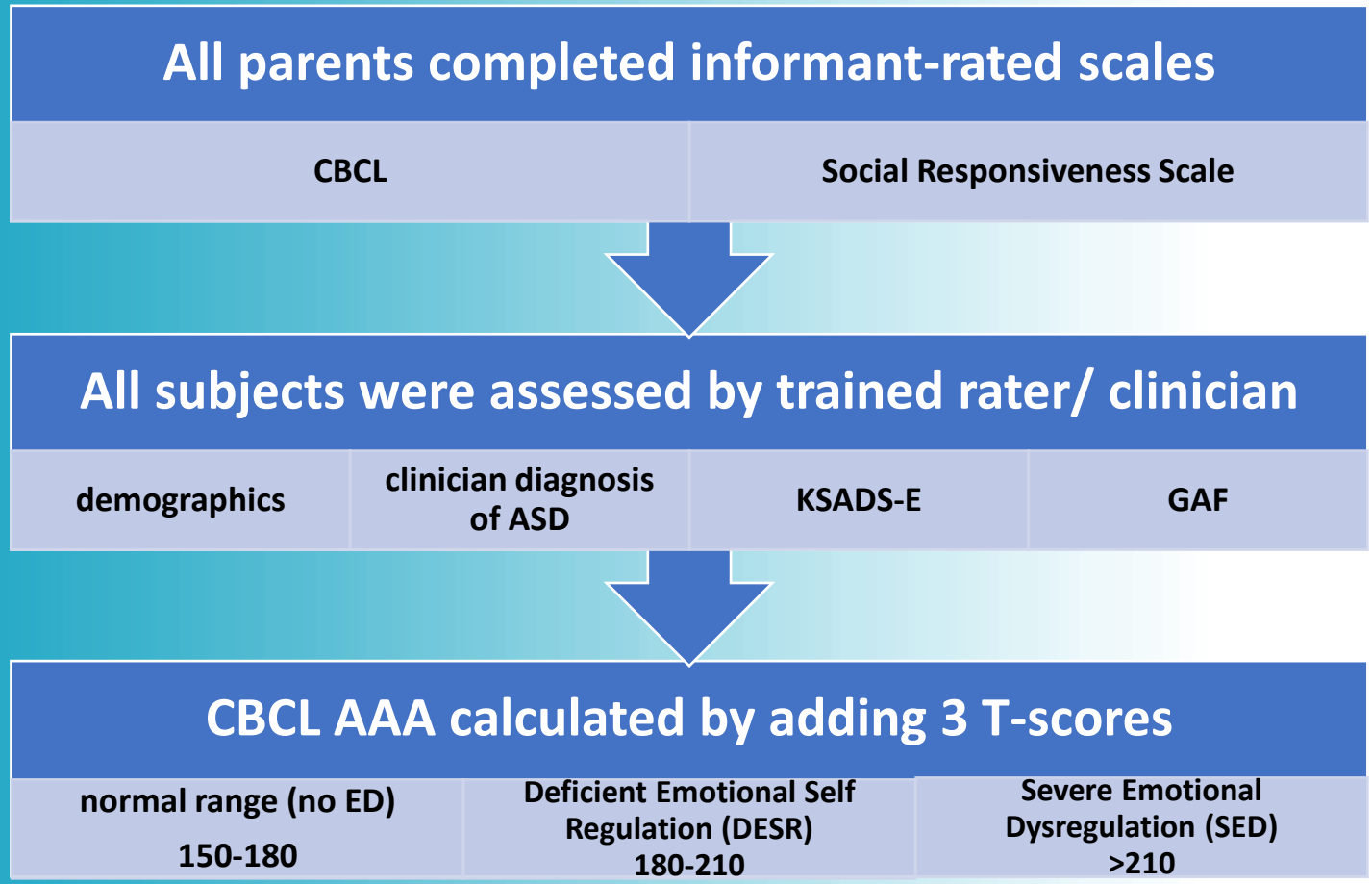
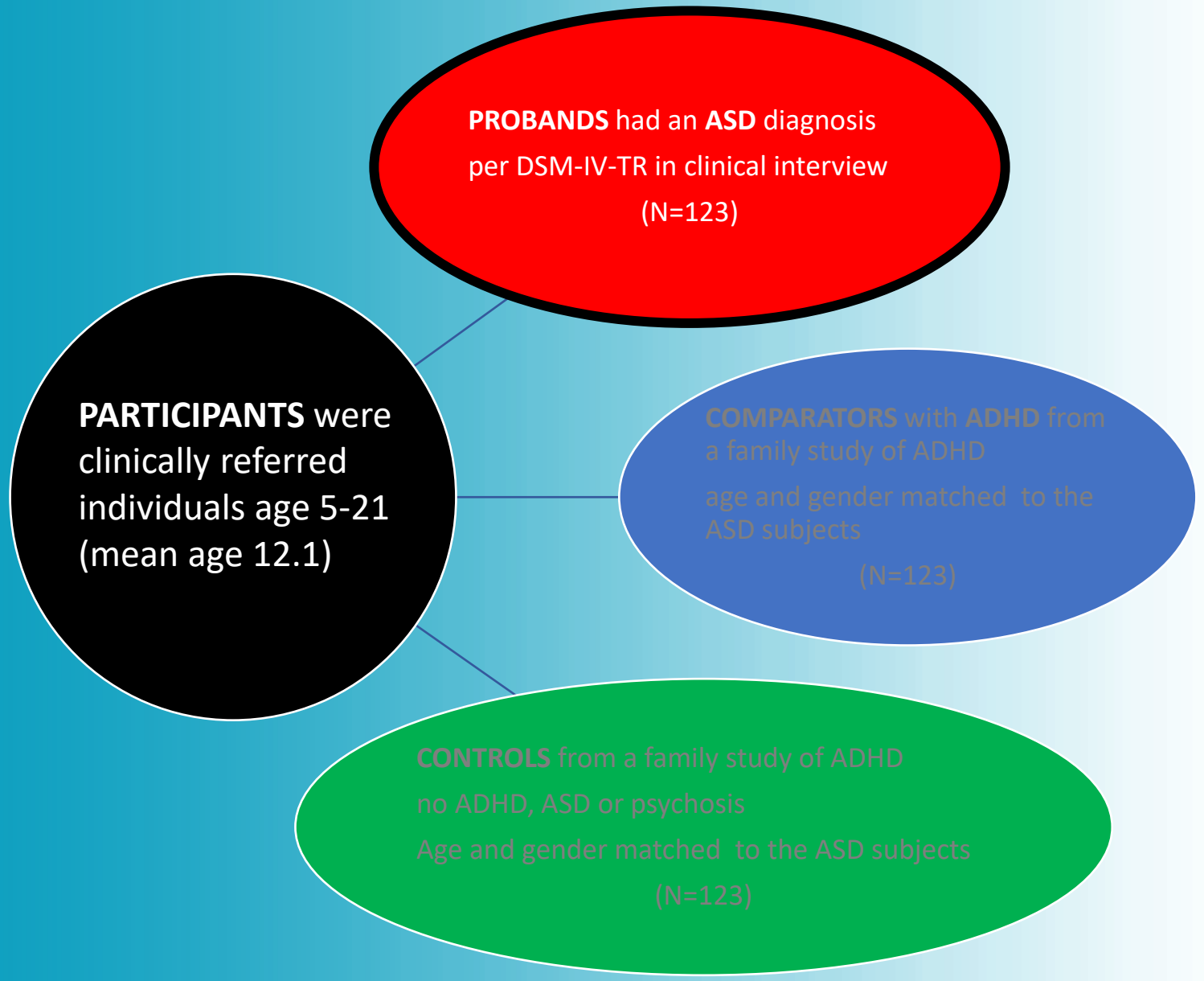
ASD participants came from an autism outpatient clinic



The Alan and Lorraine Bressler Clinical and Research Program for Autism Spectrum Disorder
Massachusetts General Hospital, Harvard Medical School

We used both parent- and clinician completed rating scales

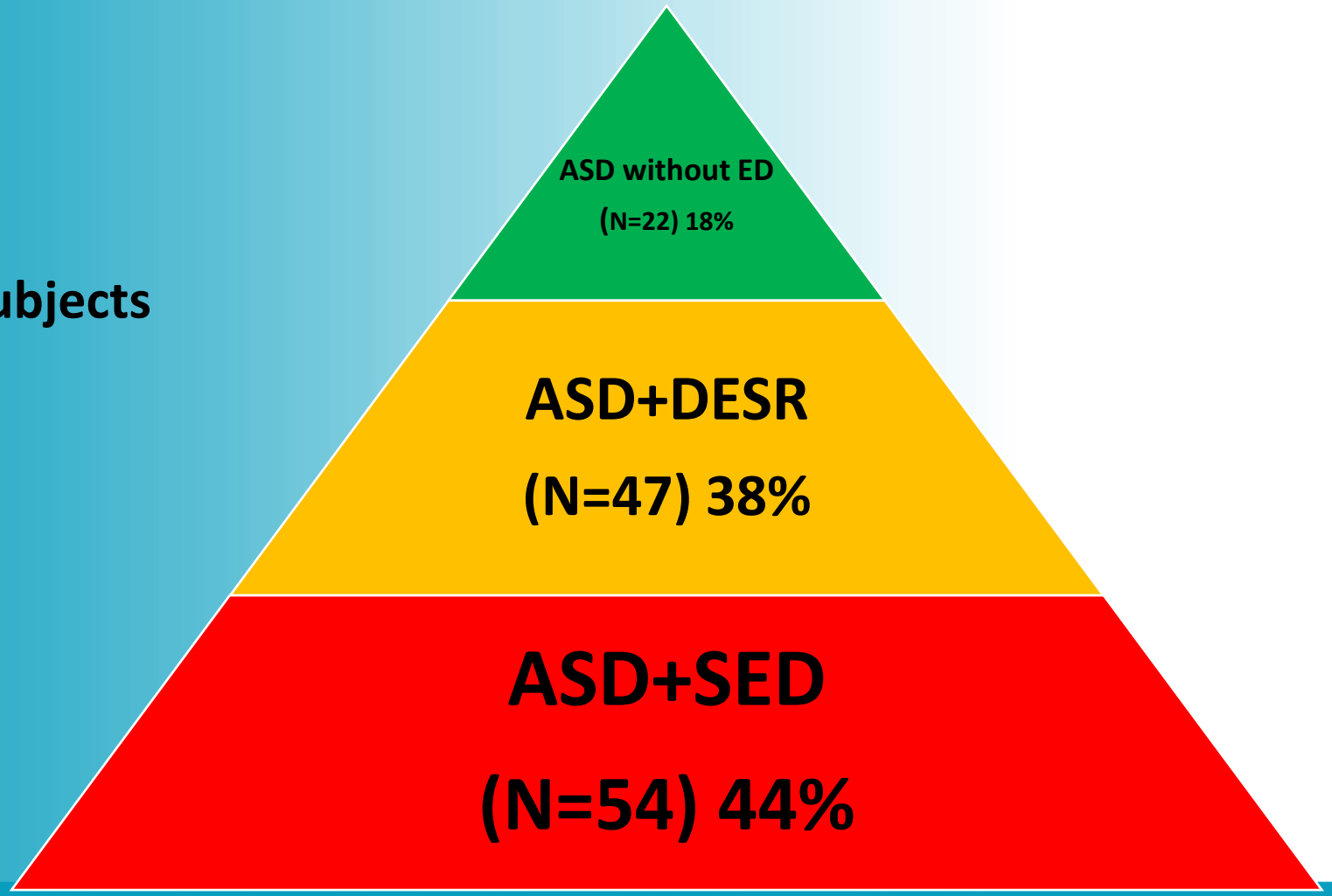



PROBANDS had an **ASD** diagnosis per DSM-IV-TR in clinical interview (N=123)
PARTICIPANTS were clinically referred individuals age 5-21 (mean age 12.1)
COMPARATORS with **ADHD** from a family study of ADHD
age and gender matched to the ASD subjects
(N=123)
CONTROLS from a family study of ADHD
no ADHD, ASD or psychosis
Age and gender matched to the ASD subjects
(N=123)

ASD + Severe Emotional Dysregulation was more common than ASD+ DESR which was more common than ASD without ED

Total Autism Subjects

N=123



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There were many similarities across the 3 types of autism with varying levels of emotional dysregulation

The distribution of ASD subtypes did not significantly differ across the three groups

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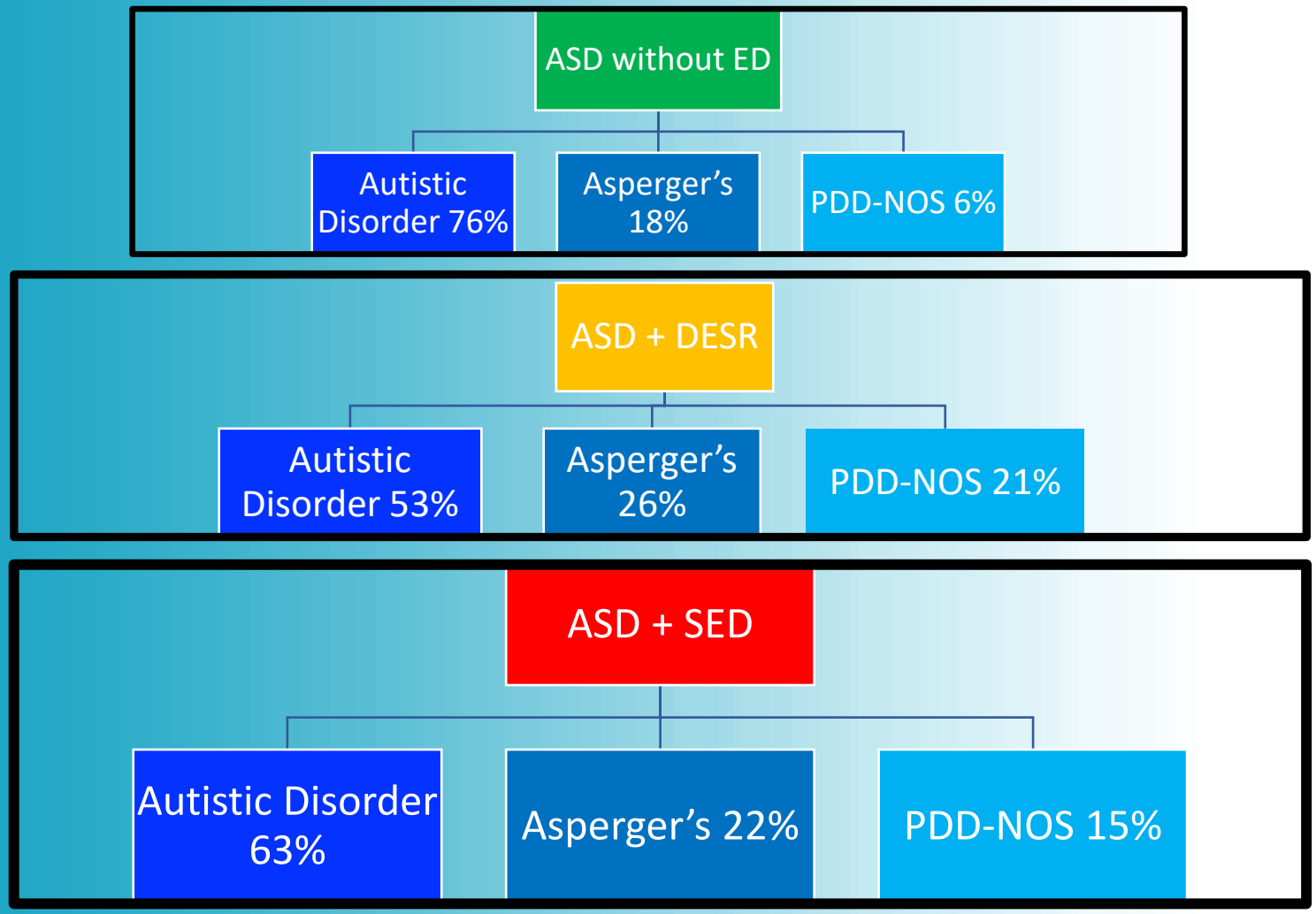
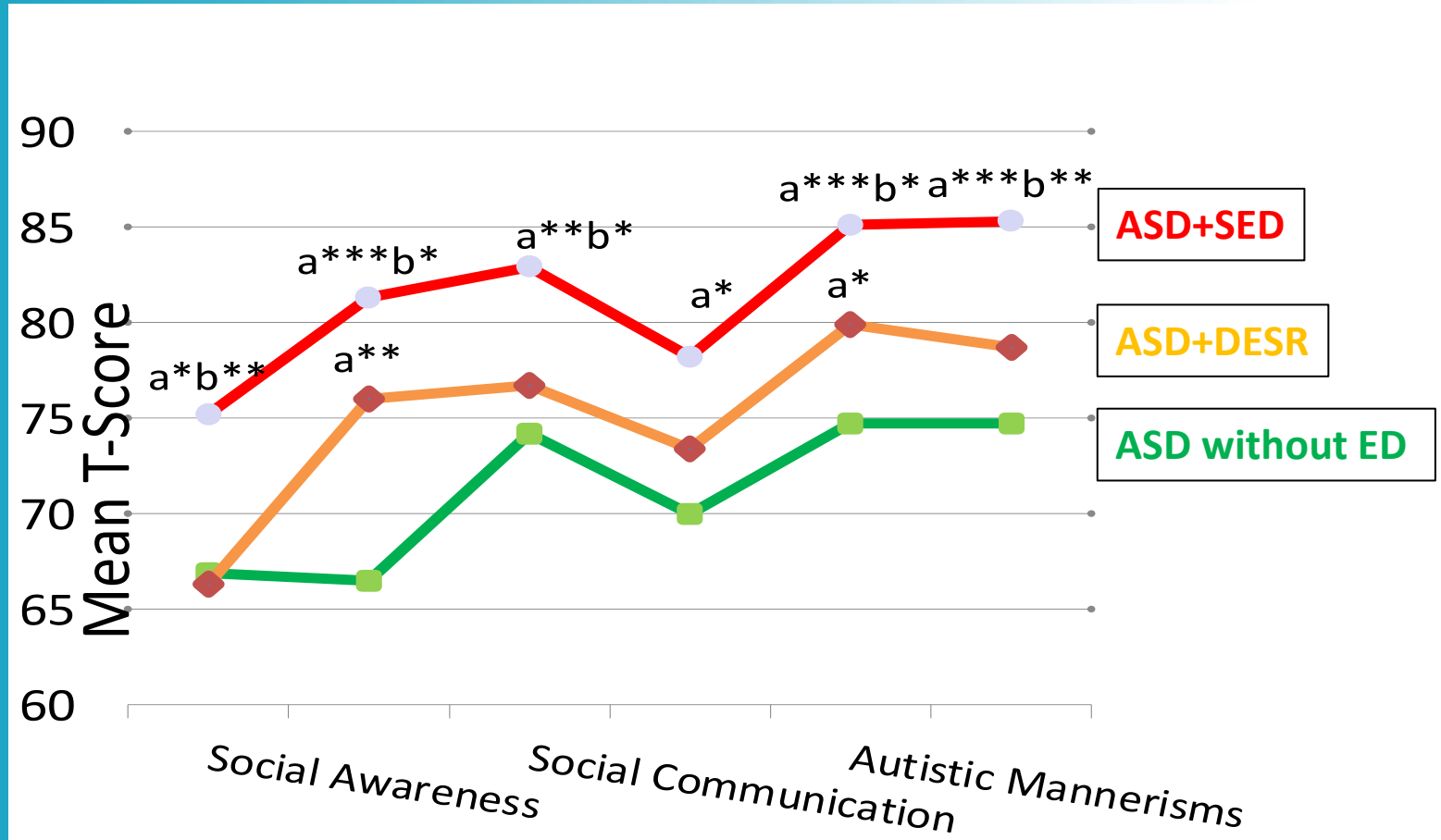
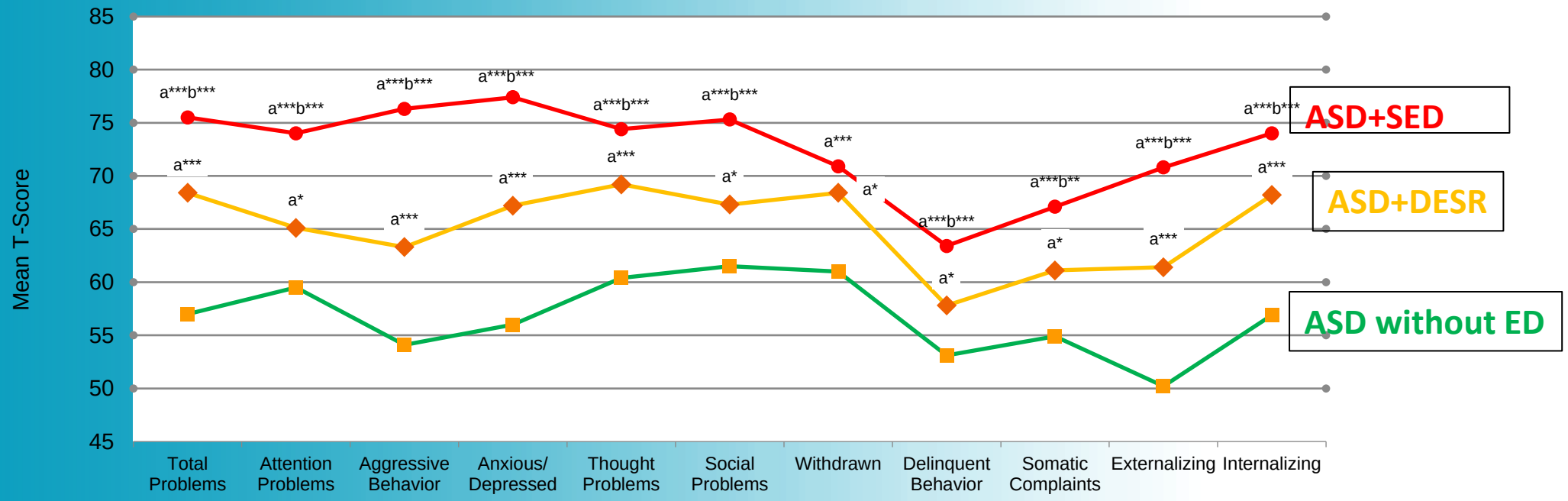


Scores on the *Social Responsiveness Scale* were the worst in ASD youth with SED (CBCL >210)

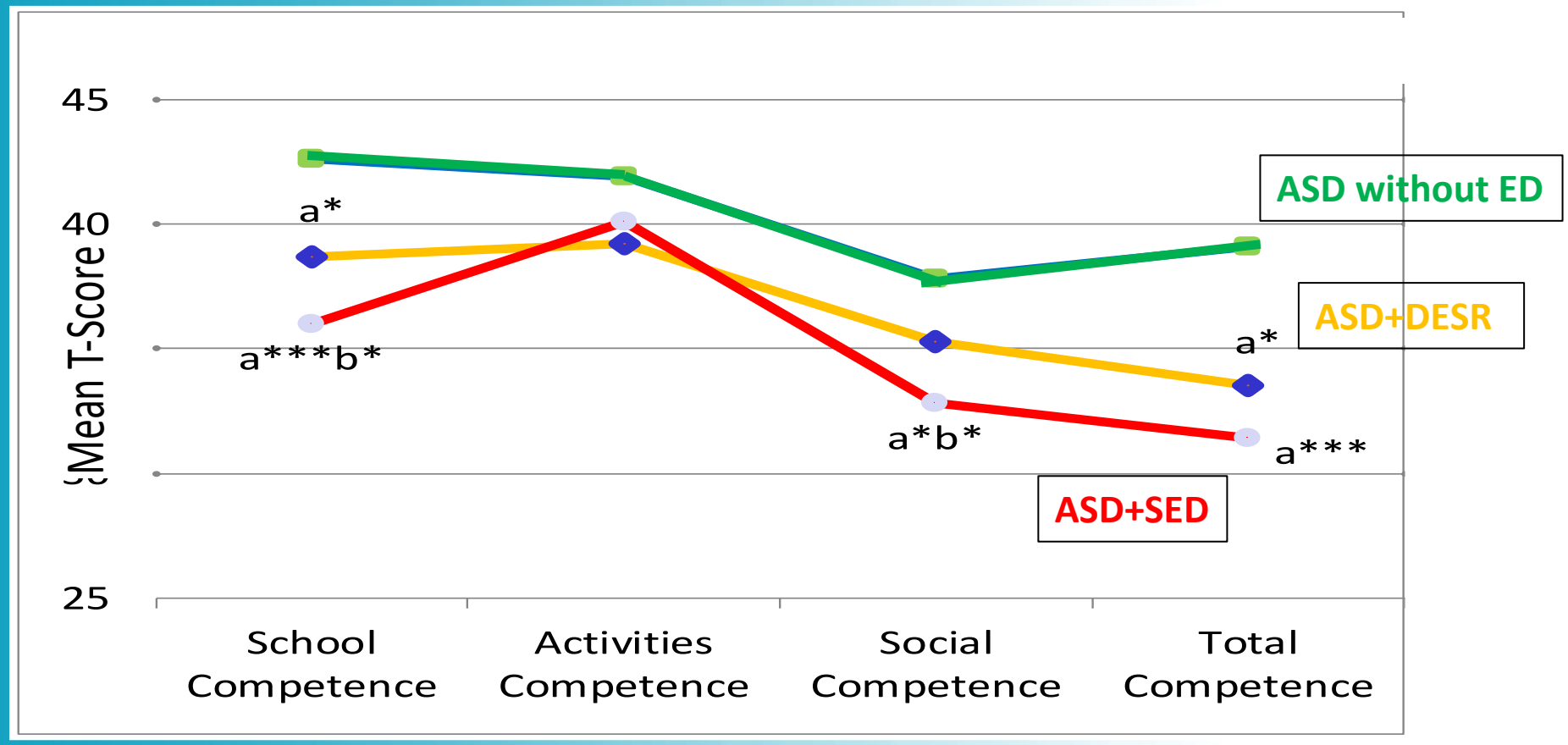


Scores on the clinical *CBCL subscales* were the worst in ASD youth with SED (CBCL >210)



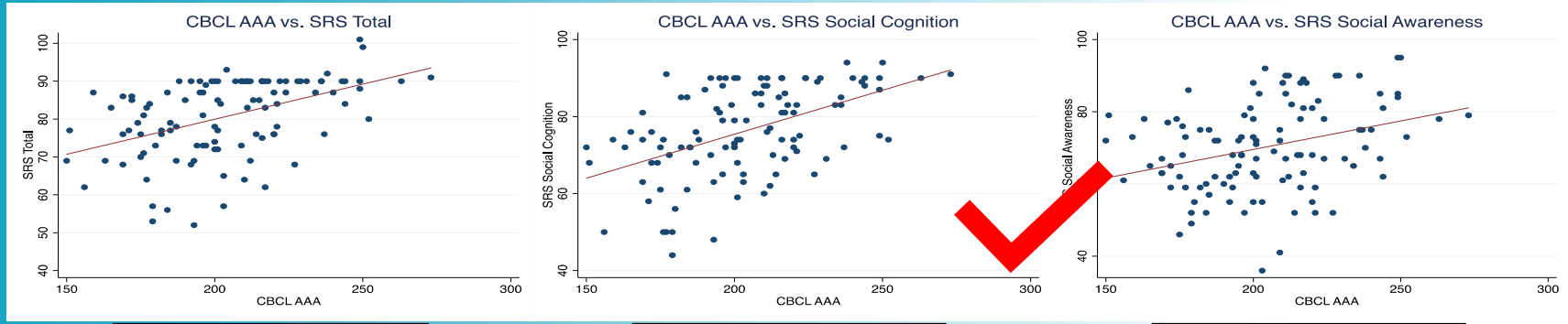
[a] versus ASD-ED; [b] versus ASD+DESR; *p<0.05; **p<0.005; ***p<0.001; [†]N: ASD-ED=16-22; ASD+DESR=39-47; ASD+SED=47-53

Scores on the clinical *CBCL Social Competence subscales* were the worst in ASD youth with DESR and SED



[a] versus ASD-ED; [b] versus ASD+DESR; *p<0.05; **p<0.005; ***p<0.001; †N: ASD-ED=16-22; ASD+DESR=39-47; ASD+SED=47-53

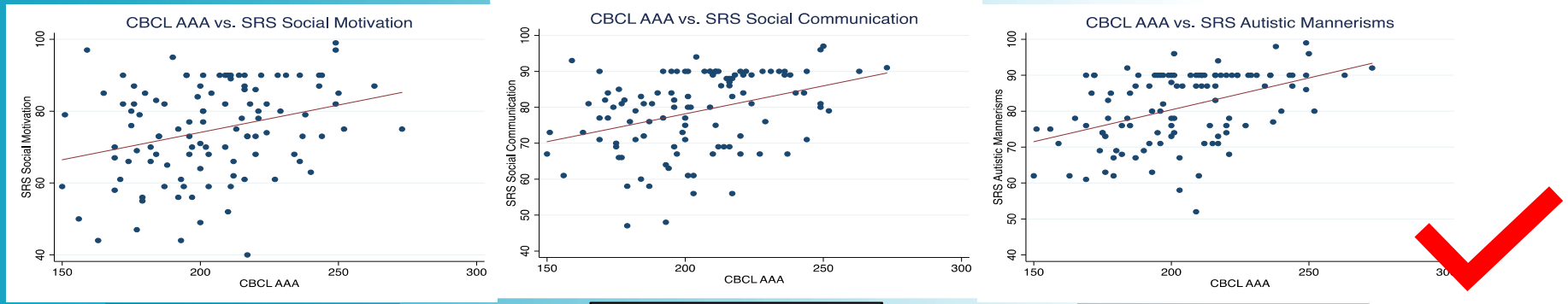
AAA score correlates moderately with SRS total score for Social Cognition and Autistic Mannerisms



r_s=0.50, df=106, p<0.001
Moderate correlation

r_s=0.48, df=106, p<0.001
Moderate correlation

r=0.33, df=108, p<0.001
Weak correlation

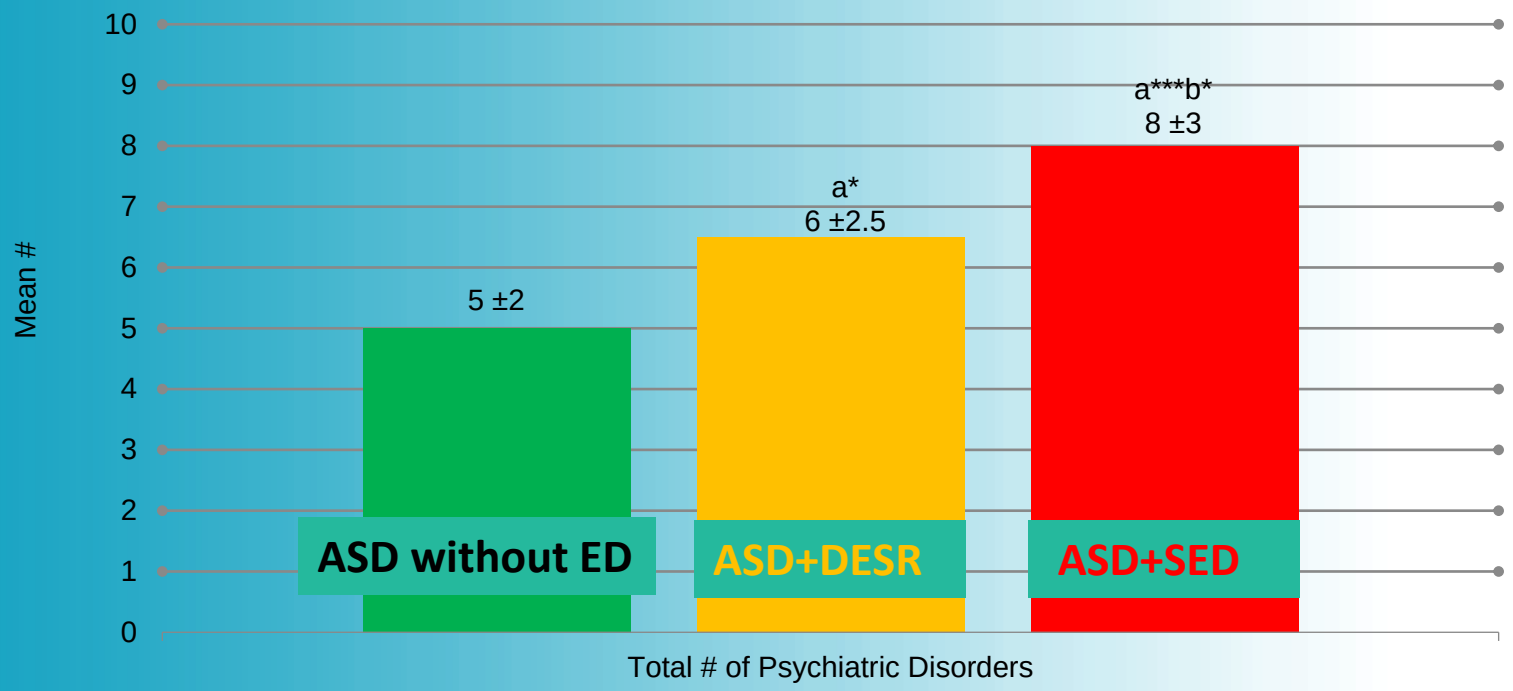


r_s=0.29, df=107, p=0.002
Weak correlation

r_s=0.37, df=106, p<0.001
Weak correlation

r_s=0.44, df=107, p<0.001
Moderate correlation

ASD youth with SED (CBCL >210) have a greater total number of psychiatric disorders



[a] versus ASD-ED; [b] versus ASD+DESR; *p<0.05; **p<0.005; ***p<0.001;
[†]N: ASD-ED=20-22; ASD+DESR=38-39; ASD+SED=42-44

ASD youth have high rates of comorbid conditions, like bipolar (especially ASD+SED)

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	ASD-ED N = 22†	ASD + DESR N = 47†	ASD + SED N = 54†	Test Statistic	P-Value
	N (%)	N (%)	N (%)		
ADHD	12 (60)	31 (79)	34 (79)	χ^2_2=3.23	0.20
Disruptive Behavior Disorders	11 (52)	25 (64)	35 (83)[a*b*]	χ^2_2=7.24	0.03
Major Depressive Disorder	7 (33)	14 (36)	30 (68)[a*b**]	χ^2_2=11.22	0.004
Bipolar Disorder	2 (10)	7 (18)	20 (45)[a**b*]	χ^2_2=12.19	0.002
Multiple (≥2) Anxiety Disorders	11 (52)	25 (64)	31 (72)	χ^2_2=2.43	0.30
Substance Use Disorders††	0 (0)	0 (0)	2 (10)	Exact	0.33

† Sample sizes vary. ASD-ED: N=20-22, ASD + DESR: N=38-39, ASD + SED: N=42-44
†† Age restricted to >12. ASD-ED: N=13, ASD + DESR: N=18, ASD + SED: N=20
[a] Compared to ASD. [b] Compared to ASD + DESR. *P<0.05, **P<0.005, ***P<0.001

Comorbidity in ASD is common

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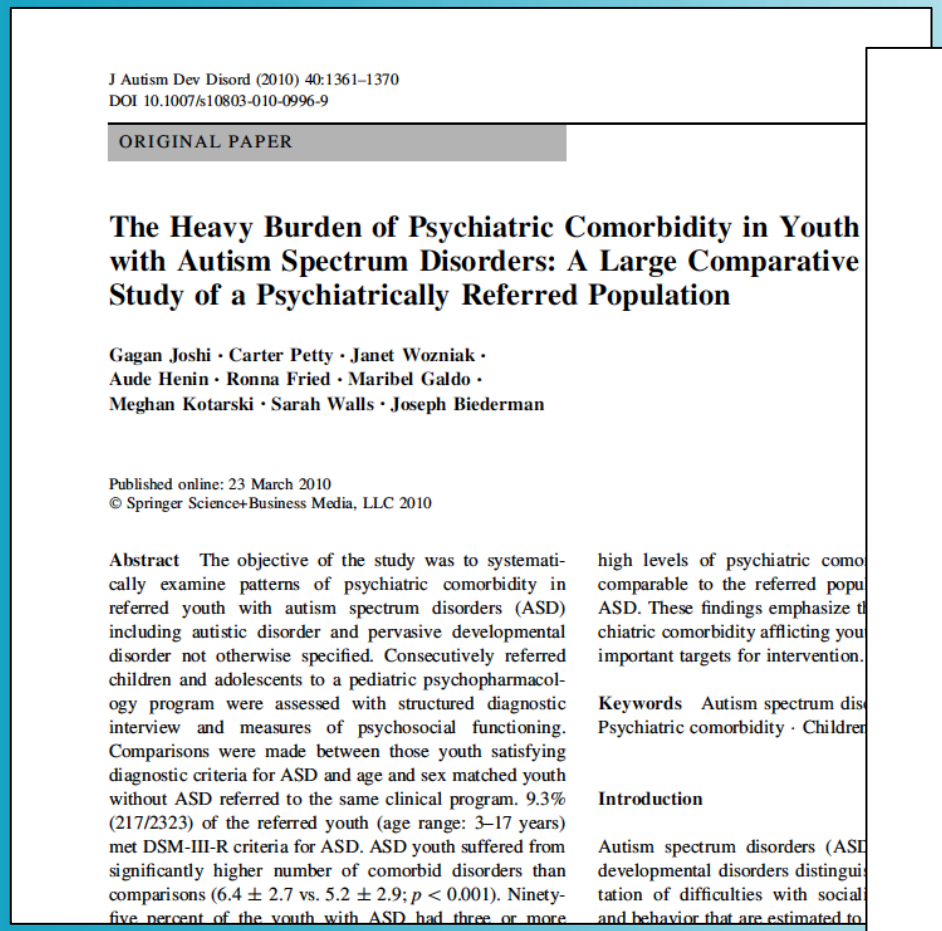


J Autism Dev Disord (2010) 40:1361–1370
DOI 10.1007/s10803-010-0996-9

ORIGINAL PAPER

The Heavy Burden of Psychiatric Comorbidity in Youth with Autism Spectrum Disorders: A Large Comparative Study of a Psychiatrically Referred Population

Gagan Joshi · Carter Petty · Janet Wozniak · Aude Henin · Ronna Fried · Maribel Galdo · Meghan Kotarski · Sarah Walls · Joseph Biederman

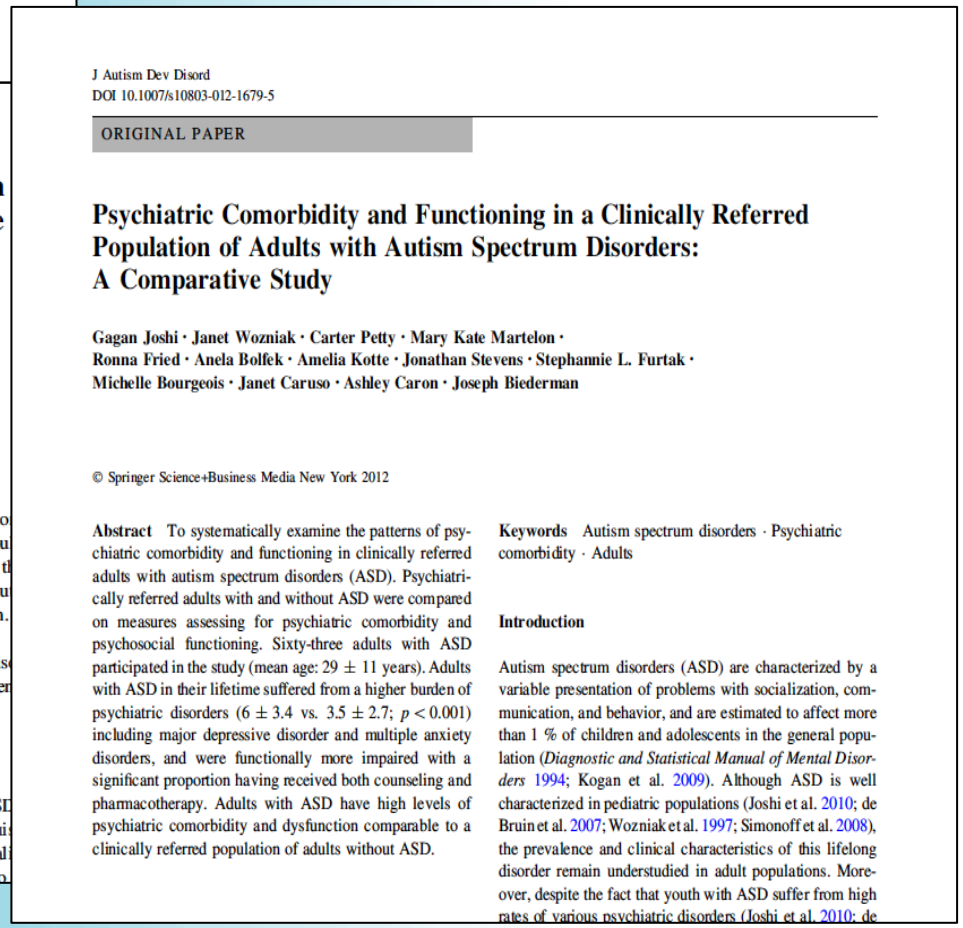
Published online: 23 March 2010

Abstract The objective of the study was to systematically examine patterns of psychiatric comorbidity in referred youth with autism spectrum disorders (ASD) including autistic disorder and pervasive developmental disorder not otherwise specified. Consecutively referred children and adolescents to a pediatric psychopharmacology program were assessed with structured diagnostic interview and measures of psychosocial functioning. Comparisons were made between those youth satisfying diagnostic criteria for ASD and age and sex matched youth without ASD referred to the same clinical program. 9.3% (217/2323) of the referred youth (age range: 3–17 years) met DSM-III-R criteria for ASD. ASD youth suffered from significantly higher number of comorbid disorders than comparisons (6.4 ± 2.7 vs. 5.2 ± 2.9; $p < 0.001$). Ninety-five percent of the youth with ASD had three or more high levels of psychiatric como comparable to the referred popu ASD. These findings emphasize t chiatric comorbidity afflicting you important targets for intervention.

Keywords Autism spectrum dis Psychiatric comorbidity · Childre

Introduction

Autism spectrum disorders (ASD developmental disorders distingui tation of difficulties with socia and behavior that are estimated to



J Autism Dev Disord
DOI 10.1007/s10803-012-1679-5

ORIGINAL PAPER

Psychiatric Comorbidity and Functioning in a Clinically Referred Population of Adults with Autism Spectrum Disorders: A Comparative Study

Gagan Joshi · Janet Wozniak · Carter Petty · Mary Kate Martelon · Ronna Fried · Anela Bolfek · Amelia Kotte · Jonathan Stevens · Stephannie L. Furtak · Michelle Bourgeois · Janet Caruso · Ashley Caron · Joseph Biederman

Abstract To systematically examine the patterns of psychiatric comorbidity and functioning in clinically referred adults with autism spectrum disorders (ASD). Psychiatrically referred adults with and without ASD were compared on measures assessing for psychiatric comorbidity and psychosocial functioning. Sixty-three adults with ASD participated in the study (mean age: 29 ± 11 years). Adults with ASD in their lifetime suffered from a higher burden of psychiatric disorders (6 ± 3.4 vs. 3.5 ± 2.7; $p < 0.001$) including major depressive disorder and multiple anxiety disorders, and were functionally more impaired with a significant proportion having received both counseling and pharmacotherapy. Adults with ASD have high levels of psychiatric comorbidity and dysfunction comparable to a clinically referred population of adults without ASD.

Keywords Autism spectrum disorders · Psychiatric comorbidity · Adults

Introduction

Autism spectrum disorders (ASD) are characterized by a variable presentation of problems with socialization, communication, and behavior, and are estimated to affect more than 1 % of children and adolescents in the general population (*Diagnostic and Statistical Manual of Mental Disorders* 1994; Kogan et al. 2009). Although ASD is well characterized in pediatric populations (Joshi et al. 2010; de Bruin et al. 2007; Wozniak et al. 1997; Simonoff et al. 2008), the prevalence and clinical characteristics of this lifelong disorder remain understudied in adult populations. Moreover, despite the fact that youth with ASD suffer from high rates of various psychiatric disorders (Joshi et al. 2010; de

ASD youth with all levels of emotional dysregulation have high rates of comorbid ADHD

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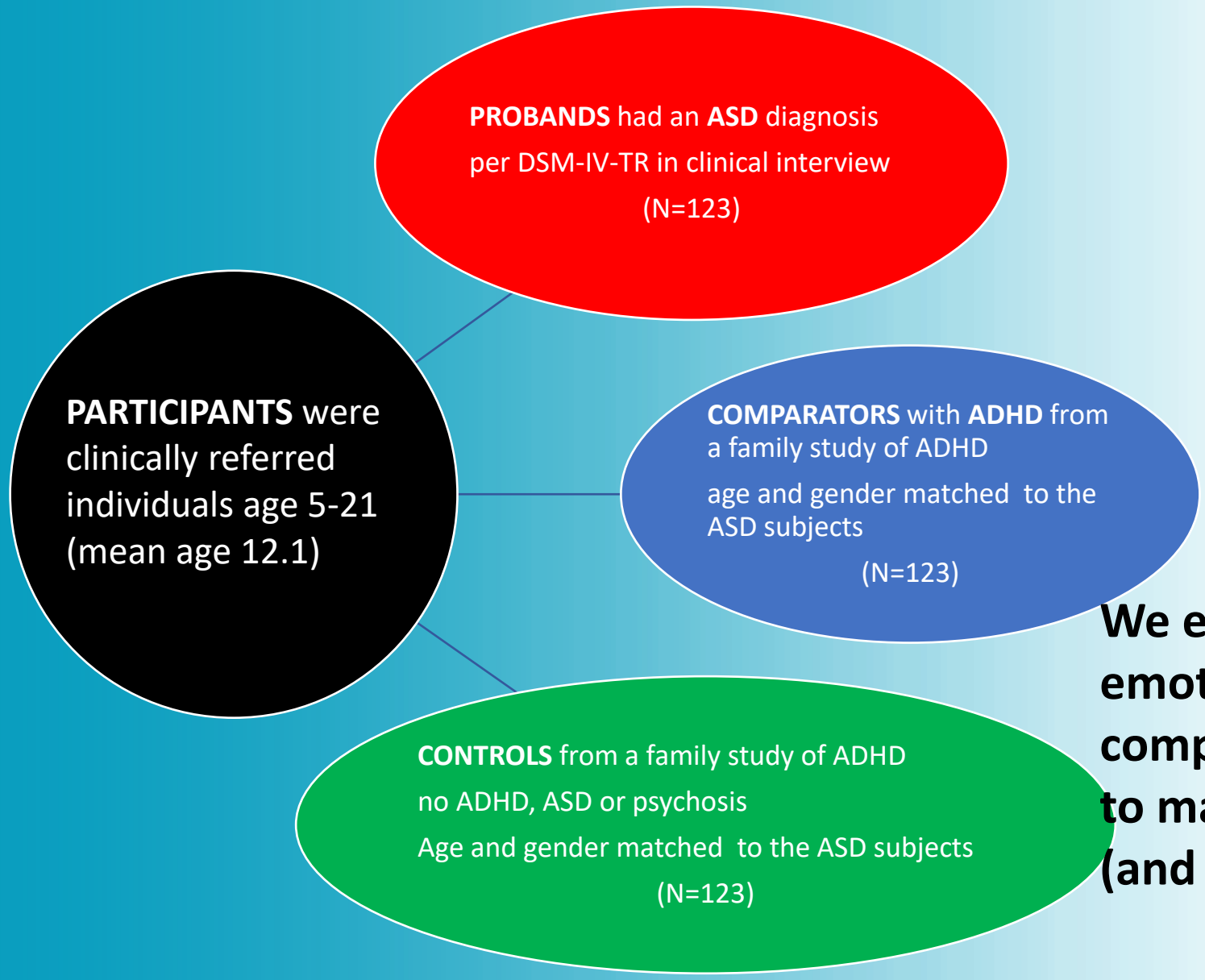
	ASD-ED N = 22†	ASD + DESR N = 47†	ASD + SED N = 54†	Test Statistic	P-Value
	N (%)	N (%)	N (%)		
ADHD	12 (60)	31 (79)	34 (79)	χ^2_2=3.23	0.20
Disruptive Behavior Disorders	11 (52)	25 (64)	35 (83)[a*b*]	χ^2_2=7.24	0.03
Major Depressive Disorder	7 (33)	14 (36)	30 (68)[a*b**]	χ^2_2=11.22	0.004
Bipolar Disorder	2 (10)	7 (18)	20 (45)[a**b*]	χ^2_2=12.19	0.002
Multiple (≥2) Anxiety Disorders	11 (52)	25 (64)	31 (72)	χ^2_2=2.43	0.30
Substance Use Disorders††	0 (0)	0 (0)	2 (10)	Exact	0.33

† Sample sizes vary. ASD-ED: N=20-22, ASD + DESR: N=38-39, ASD + SED: N=42-44
†† Age restricted to >12. ASD-ED: N=13, ASD + DESR: N=18, ASD + SED: N=20
[a] Compared to ASD. [b] Compared to ASD + DESR. *P<0.05, **P<0.005, ***P<0.001



We expanded our investigation of emotional dysregulation in ASD by comparing ASD youth (high rates of ADHD) to matched ADHD youth without ASD (and controls)

All analyses between the ASD, ADHD and Control Groups were controlled for race, IQ and SES

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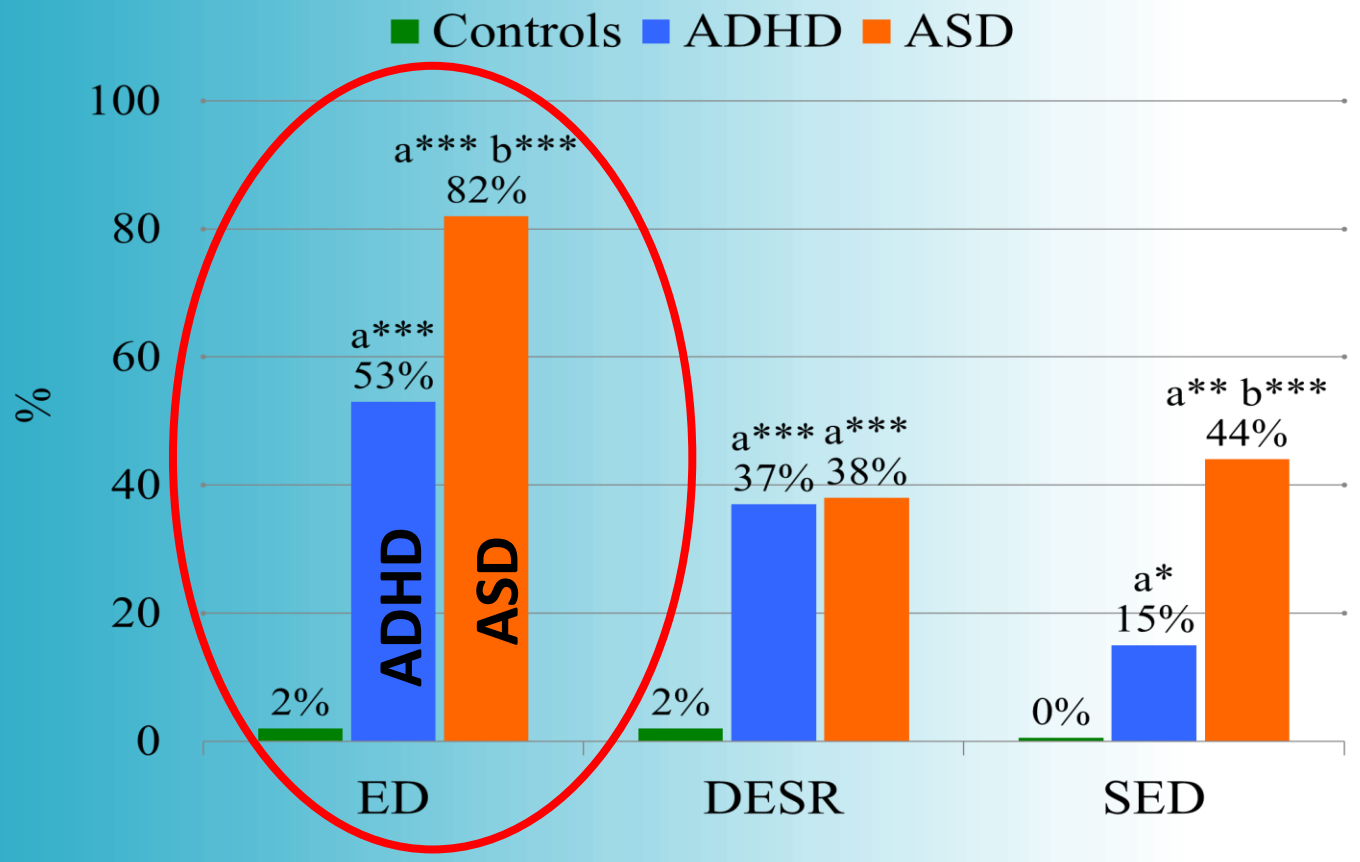
N=123 ASD (with age/gender matched ADHD and control subjects)

	Controls	ADHD	ASD	t-statistic	p-value
	(N=123)	(N=123)	(N=123)		
Age: -Mean	12.2 ± 3.4	11.4 ± 2.9	12.1 ± 3.4	$F_{(2, 366)}$=2.06	0.13
-Range	6-18	6-18	5-21		
Gender: Male	106 (86)	106 (86)	106 (86)	NA	NA
Race: Caucasian	117 (98)[N=120]	119 (100)[N=119]	108 (88)a**b***	Exact	<0.001
IQ: -Mean	117 ±11	108.8 ±13.4a***	101.2 ±14.8a***b***	$F_{(2, 366)}$=43.78	<0.001
-Range	87.5-133	73.5-133	70-141		
SES	1.5 ±0.7	1.8 ±1a**	2.0 ±1[N=107] a***	$\chi^2_{(2)}$=17.75	<0.001
	ASD	ASD+DESR	ASD+SED		
	(N=22)	(N			
Age: -Mean	13.4 ±3.6	12			
-Range	7-18	6-			
Gender: Male	21 (95)	41			
Race: Caucasian	22 (100)	41			
IQ: -Mean	106.1 ±16.7	99			
-Range	77-136	70			
SES	1.8 ±0.8[N=22]	2.			

- The ASD group had significantly *fewer Caucasians* and *lower IQ* compared to the ADHD and Control groups.
- Both the ASD and ADHD groups had significantly *lower IQ* and *SES* compared to the Control group.

All subsequent analyses between the ASD, ADHD, and Control groups **controlled for race, IQ, and SES.**

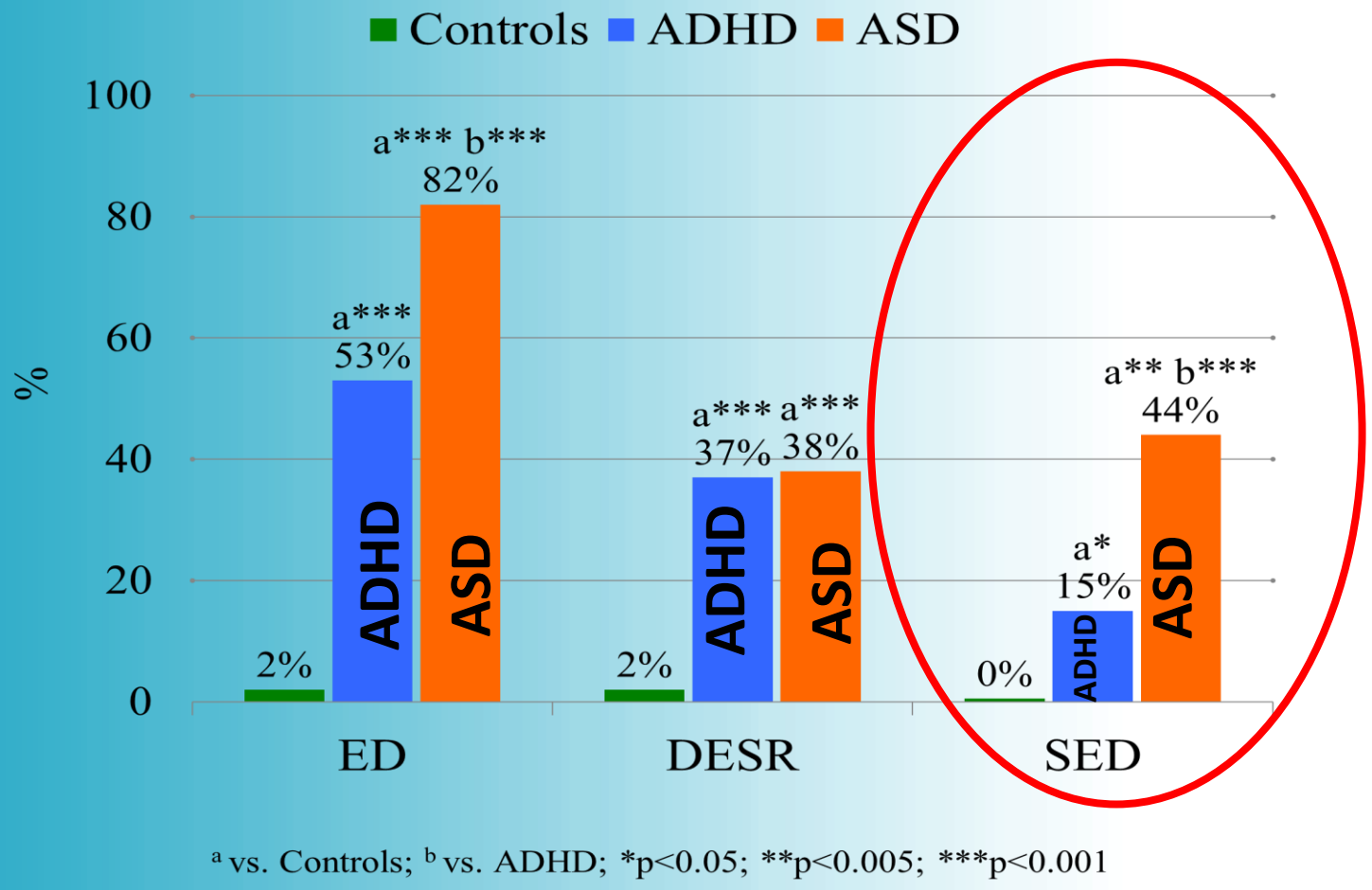
Emotional Dysregulation (CBCL AAA > 180) is more common in ASD youth compared to ADHD youth



[a] vs. Controls; [b] vs. ADHD; *p<0.05; **p<0.005; ***p<0.001

Controlled for differences in SES, race, IQ

And SED (CBCL >210), but not DESR (CBCL 180-210), is more common in ASD youth compared to ADHD



[a] vs. Controls; [b] vs. ADHD; *p<0.05; **p<0.005; ***p<0.001

Controlled for differences in SES, race, IQ

High rates of mood disorders are reported in ASD

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Table 2 Psychiatric Comorbidities in Psychiatrically Referred ASD and Non-ASD Youth

	ASD ($N = 217$) N (%)	Non-ASD ($N = 217$) N (%)	$\chi^2_{(1)}$	p-value	Holm's adjusted alpha
Language disorder	105 (48)	59 (27)	18.93	<0.001	0.002
Tic disorder					
Tic disorder (motor or vocal)	50 (23)	43 (20)	0.69	0.41	0.01
Tourette's disorder	40 (18)	34 (16)	0.49	0.48	0.012
Disruptive behavior disorder					
Attention-deficit/hyperactivity disorder	181 (83)	173 (80)	0.75	0.39	0.008
Oppositional defiant disorder	158 (73)	146 (68)	1.49	0.22	0.005
Conduct disorder	47 (22)	48 (22)	0.01	0.90	0.05
Mood disorder					
Major depressive disorder	121 (56)	102 (47)	3.44	0.06	0.004
Bipolar I disorder	68 (31)	65 (30)	0.11	0.74	0.017
Psychosis	42 (20)	27 (12)	4.09	0.04	0.003
Anxiety disorder					
Multiple anxiety disorders (≥2)	133 (61)	92 (42)	15.14	<0.001	0.002
Specific phobia	79 (37)	43 (20)	14.09	<0.001	0.003
Separation anxiety disorder	79 (37)	77 (35)	0.04	0.84	0.025
Agoraphobia	77 (35)	41 (19)	14.73	<0.001	0.003
Gener					0.006
Social					0.0031
Obses					0.004
Panic					0.007
Post t					0.006
Substan					
Substa					0.003
Cigare					0.004
Elimina					
Enures					0.005
Encop					0.002

[a] Limit

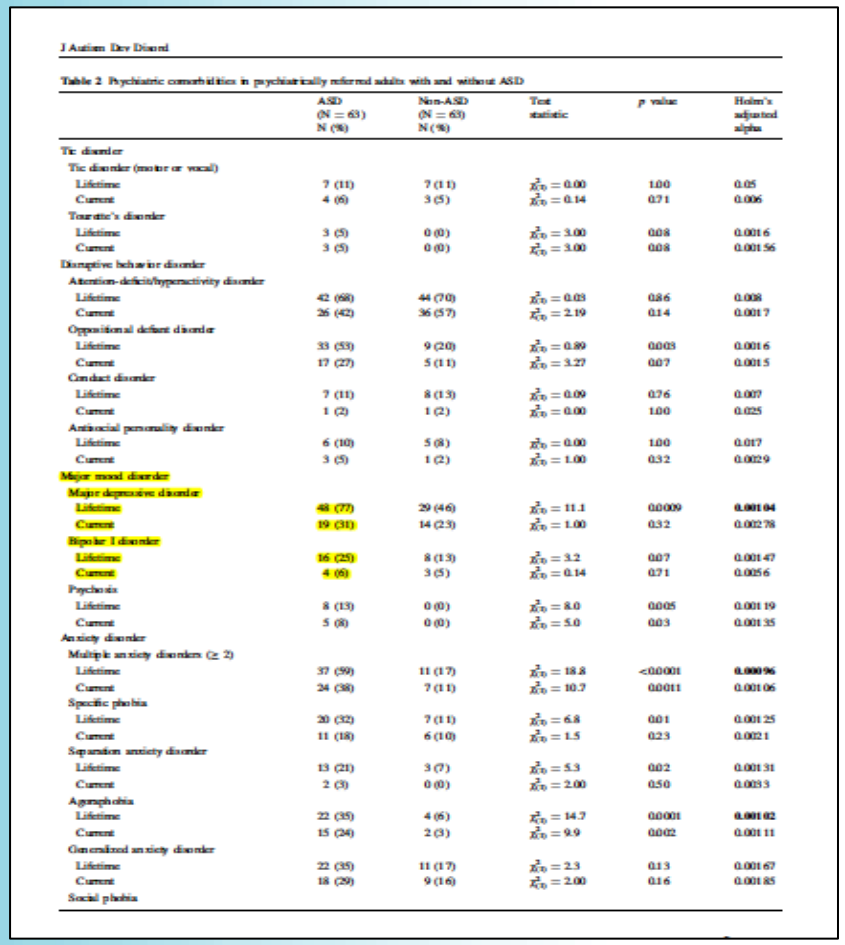
Assessed with KSADS

Mood Disorders in ASD youth:

- **MDD 56%**
- **BPD 31%**

Mood Disorders in ASD adults:

- **MDD 77%**
- **BPD 25%**



J Autism Dev Disord

Table 2 Psychiatric comorbidities in psychiatrically referred adults with and without ASD

	ASD (N = 63) N (%)	Non-ASD (N = 63) N (%)	Test statistic	p value	Holm's adjusted alpha
Tic disorder					
Tic disorder (motor or vocal)					
Lifetime	7 (11)	7 (11)	$\chi^2_{(1)} = 0.00$	1.00	0.05
Current	4 (6)	3 (5)	$\chi^2_{(1)} = 0.14$	0.71	0.006
Tourette's disorder					
Lifetime	3 (5)	0 (0)	$\chi^2_{(1)} = 3.00$	0.08	0.0016
Current	3 (5)	0 (0)	$\chi^2_{(1)} = 3.00$	0.08	0.00156
Disruptive behavior disorder					
Attention-deficit/hyperactivity disorder					
Lifetime	42 (68)	44 (70)	$\chi^2_{(1)} = 0.03$	0.86	0.008
Current	26 (42)	36 (57)	$\chi^2_{(1)} = 2.19$	0.14	0.0017
Oppositional defiant disorder					
Lifetime	33 (53)	9 (20)	$\chi^2_{(1)} = 0.89$	0.003	0.0016
Current	17 (27)	5 (11)	$\chi^2_{(1)} = 3.27$	0.07	0.0015
Conduct disorder					
Lifetime	7 (11)	8 (13)	$\chi^2_{(1)} = 0.09$	0.76	0.007
Current	1 (2)	1 (2)	$\chi^2_{(1)} = 0.00$	1.00	0.025
Antisocial personality disorder					
Lifetime	6 (10)	5 (8)	$\chi^2_{(1)} = 0.00$	1.00	0.017
Current	3 (5)	1 (2)	$\chi^2_{(1)} = 1.00$	0.32	0.0029
Major mood disorder					
Major depressive disorder					
Lifetime	48 (77)	29 (46)	$\chi^2_{(1)} = 11.1$	0.0009	**0.00104**
Current	19 (31)	14 (23)	$\chi^2_{(1)} = 1.00$	0.32	0.00278
Bipolar I disorder					
Lifetime	16 (25)	8 (13)	$\chi^2_{(1)} = 3.2$	0.07	0.00147
Current	4 (6)	3 (5)	$\chi^2_{(1)} = 0.14$	0.71	0.0056
Psychosis					
Lifetime	8 (13)	0 (0)	$\chi^2_{(1)} = 8.0$	0.005	0.00119
Current	5 (8)	0 (0)	$\chi^2_{(1)} = 5.0$	0.03	0.00135
Anxiety disorder					
Multiple anxiety disorders (≥ 2)					
Lifetime	37 (59)	11 (17)	$\chi^2_{(1)} = 18.8$	<0.0001	**0.00096**
Current	24 (38)	7 (11)	$\chi^2_{(1)} = 10.7$	0.0011	0.00106
Specific phobia					
Lifetime	20 (32)	7 (11)	$\chi^2_{(1)} = 6.8$	0.01	0.00125
Current	11 (18)	6 (10)	$\chi^2_{(1)} = 1.5$	0.23	0.0021
Separation anxiety disorder					
Lifetime	13 (21)	3 (7)	$\chi^2_{(1)} = 5.3$	0.02	0.00131
Current	2 (3)	0 (0)	$\chi^2_{(1)} = 2.00$	0.50	0.0033
Agoraphobia					
Lifetime	22 (35)	4 (6)	$\chi^2_{(1)} = 14.7$	0.0001	**0.00102**
Current	15 (24)	2 (3)	$\chi^2_{(1)} = 9.9$	0.002	0.00111
Generalized anxiety disorder					
Lifetime	22 (35)	11 (17)	$\chi^2_{(1)} = 2.3$	0.13	0.00167
Current	18 (29)	9 (16)	$\chi^2_{(1)} = 2.00$	0.16	0.00185
Social phobia					

Joshi 2010, 2012

Is the bipolar disorder in autism *bona fide* bipolar disorder?

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PSYCHIATRY ACADEMY

J Autism Dev Disord (2010) 40:1361–1370 1365

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J Autism Dev Disord

Table 2 Psychiatric comorbidities in psychiatrically referred adults with and without ASD

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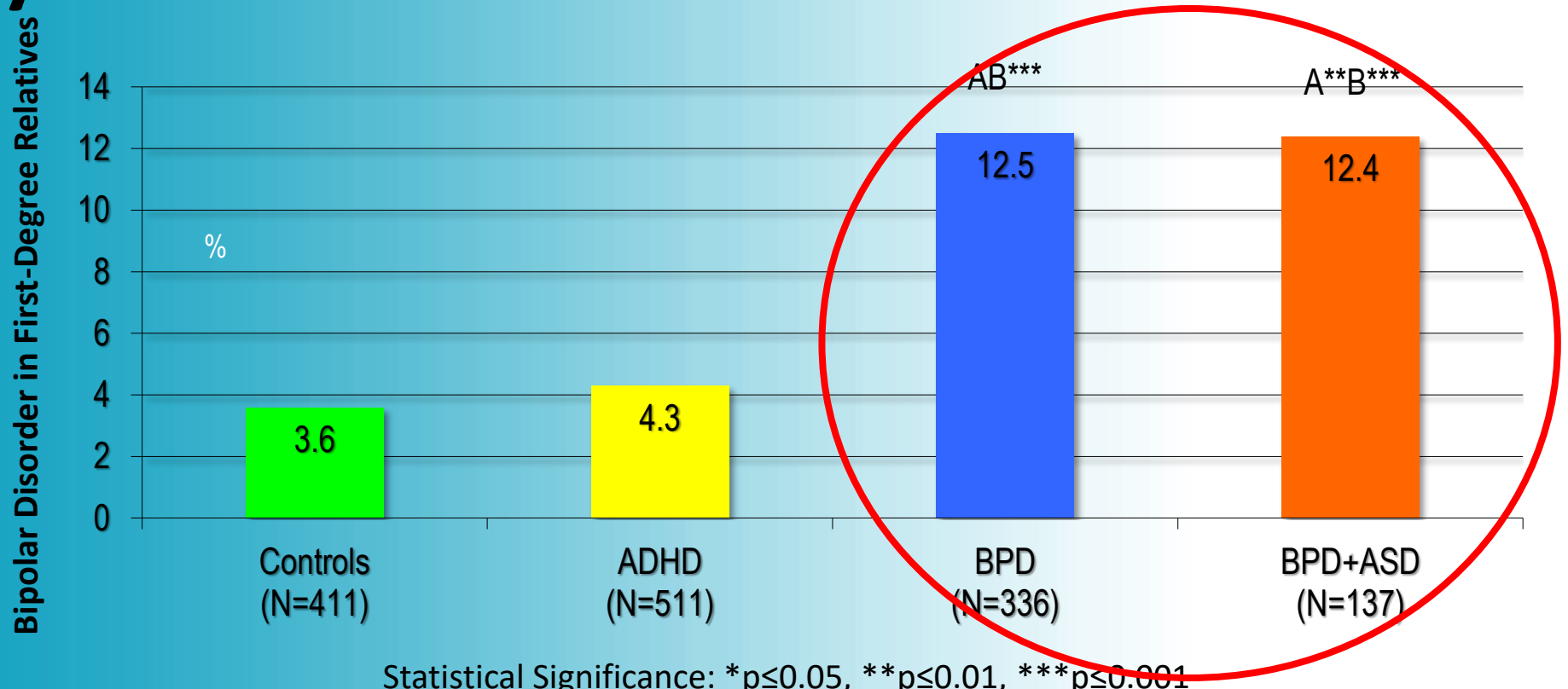
Social phobia					

Joshi 2010, 2012

A family history of bipolar disorder is present in bipolar youth both with and without autism



Statistical Significance: *p≤0.05, **p≤0.01, ***p≤0.001
A = vs. Control; B = vs. ADHD

BPD probands = 108 (relatives N=336)
BPD+ASD probands=47 (relatives N=137

Joshi *J Clin Psychiatry*. 2013.

Autism is often excluded from clinical trials, but was *included* in our clinical trials of SGAs for bipolar youth (N=151)

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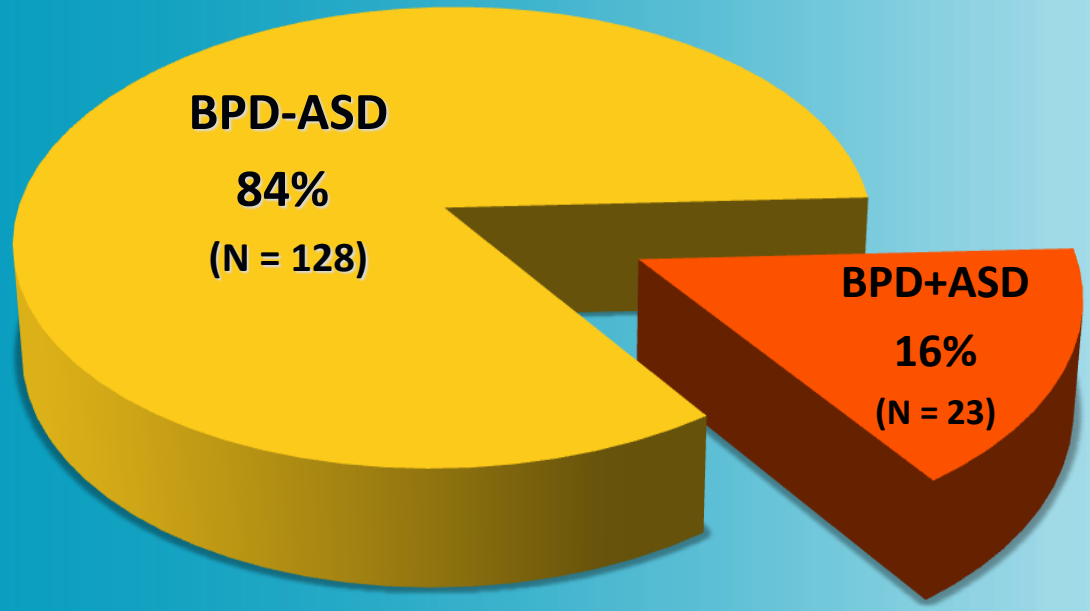


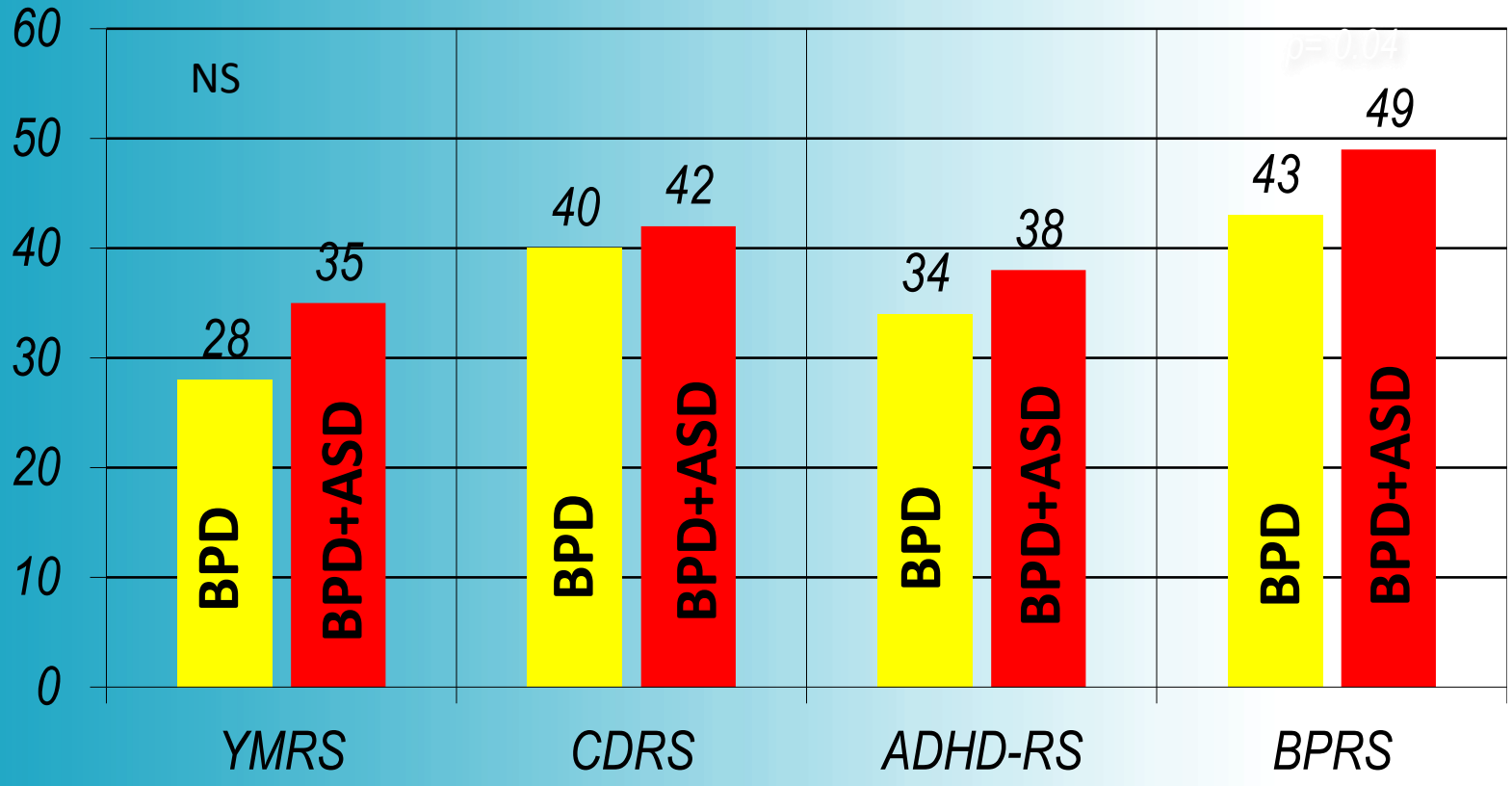
Male and female 4–17 years
Met criteria for bipolar I, II or NOS
8-week, open-label flexible dosing

N=19 aripiprazole (9.4 ± 4.2 mg/day)
N=20 quetiapine (240.4 ± 165.4 mg/day)
N=21 ziprasidone (56.2 ± 34.4 mg/day)
N=52 risperidone (1.3 ± 0.7 mg/day)
N=53 olanzapine (8.5 ± 4.2mg/day)
with and without topiramate

We conducted a secondary analysis of 6 identically designed open-label trials of SGA therapy for pediatric BPD (N=165) 1999 – 2012, all but one monotherapy

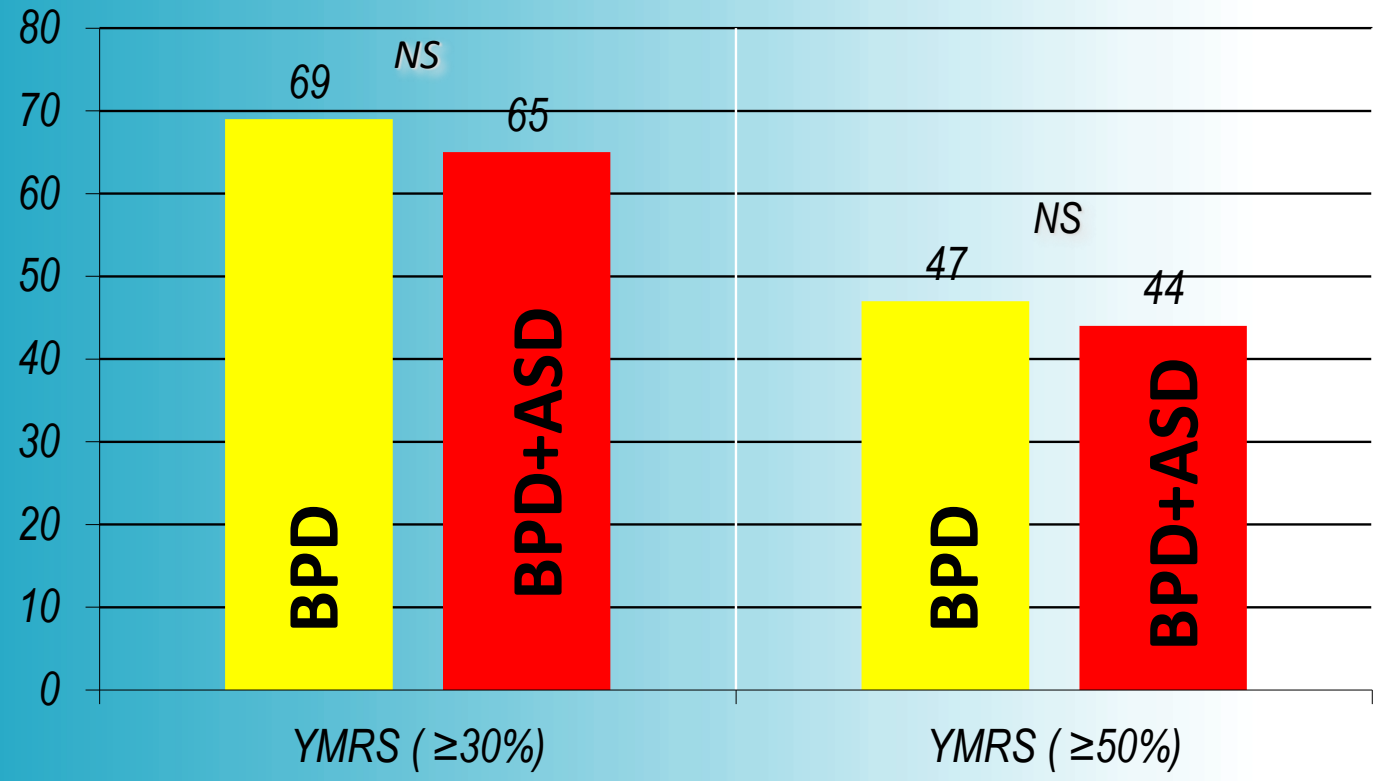
CNS Neurosci Ther. Jan. 2012;18(1):28-33 Biederman (risperidone) 2005; Biederman (olanzapine) 2005; Biederman (aripiprazole) 2007; Biederman (ziprasidone) 2007; Wozniak (olanzapine+topiramate) 2009; Joshi (quetiapine) 2012

Rating scale scores are similar in BPD youth with and without autism



CNS Neurosci Ther. 2012

We found no difference in the anti-manic response of SGAs in bipolar youth with and without ASD



CNS Neurosci Ther 2012

Better methods of assessing and treating ED in autism are needed in the hopes of improving course and outcome of a disorder that is already highly compromising

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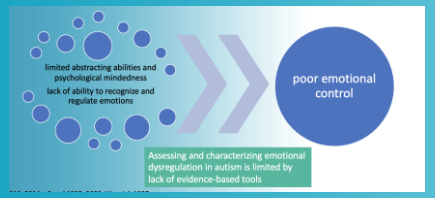
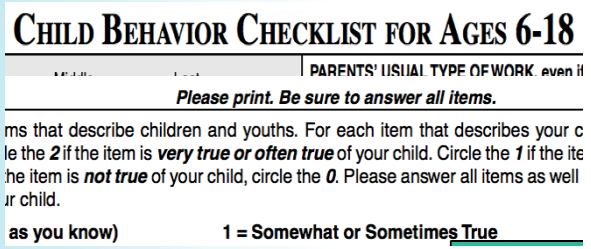


Youth with autism are often referred due to emotional dysregulation.

The CBCL can delineate different levels of emotional dysregulation in autism

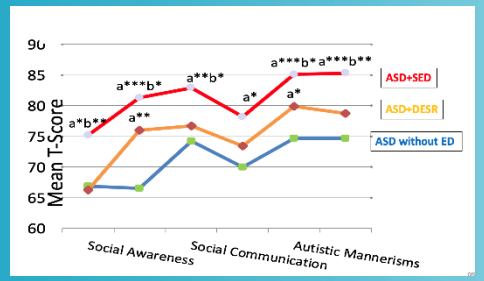

CHILD BEHAVIOR CHECKLIST FOR AGES 6-18

PARENTS' USUAL TYPE OF WORK, even if

Please print. Be sure to answer all items.

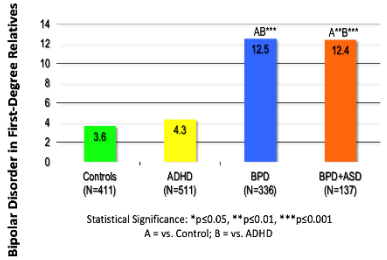
ms that describe children and youths. For each item that describes your c
le the ***2*** if the item is ***very true or often true*** of your child. Circle the ***1*** if the ite
he item is ***not true*** of your child, circle the ***0***. Please answer all items as well
r child.

as you know) 1 = Somewhat or Sometimes True



There are clinically distinct subytpes of ASD with and without deficient emotional self regulation and severe emotional dysregulation

Comorbidity analysis:
Autism + ADHD is common and associated with more severe emotional dysregulation than ADHD.
BPD comorbid with autism is a bona fide comorbidity and responds to SGA treatment similar to bipolar without autism.



Questions?