

## ADOS-2 Administration and Coding

### Aims of ADOS-2 and ADI-R

Gather standardised information on autism 'triad'

- social behavior
- vocalizations/speech, gesture, non-verbal language
- play/interests/creativity

### Diagnostic Criteria – DSM / ICD

Qualitative Impairment in social interaction

- eye-gaze,
- facial expression,
- body postures,
- gestures to regulate social interaction
- seeking to share enjoyment, interests or achievements
- social or emotional reciprocity

### Diagnostic Criteria – DSM / ICD

Impairments in communication

- spoken language / gesture
- Initiating / maintaining conversation
- stereotyped repetitive idiosyncratic language
- make-believe or social imitative play

### Diagnostic Criteria – DSM / ICD

#### Restricted, repetitive /stereotyped behaviour

- encompassing preoccupations,
- stereotyped and restricted patterns of interest;
- abnormal in intensity or focus
- inflexible adherence to routines/rituals
- stereotyped and repetitive motor mannerisms
- persistent preoccupation with parts of objects

### DSM-5 Autism Spectrum Disorder

#### Must meet criteria A, B, C, and D:

- A Persistent deficits in social communication and social interaction across contexts
- B Restricted, repetitive patterns of behaviour, interests, or activities
- C Symptoms must be present in early childhood -
  - but may not become fully manifest until social demands exceed limited capacities
- D Symptoms together limit and impair everyday functioning.
- E – Not better explained by LD

### Social Communication Disorder

- Persistent difficulties in pragmatics or social uses of verbal /nonverbal communication
  - affects development of social reciprocity and social relationships
- Persistent difficulties in acquisition /use of spoken / written / other language modalities for narrative and discourse
- Rule out ASD
  - Particularly in respect of restrictive repetitive behaviours
- Onset in early childhood – when demands exceed capacity

### Diagnostic Guidelines DSM – IV / ICD-10

#### Autistic Disorder / Childhood Autism

- difficulties in all three areas age of onset < 36m

#### Asperger's Disorder / Syndrome

- social interaction deficit,
- restricted, repetitive behaviours.
- no language delay and average cognitive skills

#### PDD-NOS / Atypical Autism

- social impairment
- language difficulties or repetitive behaviours,

## ADOS-2 and ADI-R

### Informant interview (ADI-R)

- developmental history / events at onset
- pervasiveness and context
- phenotypic description

### Direct observation (ADOS-2)

- context to observe current behaviors
- include parents for young children

## ADOS-2 Modules One to Four – Language and Developmental Levels

ADOS-2 Module	Expressive Language Level	
	Minimum	Maximum
Toddler (12-30 m) One (> 30m)	No Speech	Simple Phrases
Two	Flexible Three Word Phrases*	Verbally Fluent* (younger child < 6yrs)
Three	Verbally Fluent (older child / younger adolescent < 16yrs)	-----
Four	Verbally Fluent (older adolescent/ adult)	-----

## CODING

### Five Domains in Coding Section

- Language and Communication
- Reciprocal Social Interaction
- Play / Imagination / Creativity
- Stereotyped Behaviours / Restricted Interests
- Other Abnormal Behaviours

## Coding Conventions

- 0 Behavior of type specified is not present - not necessarily normal
- 1 Behavior of type specified is present, but not sufficiently severe, frequent or marked for code of 2
- 2 Behavior of type specified definitely present and meets specific mandatory criteria
- 3 Behavior present to a degree that interferes with functioning or ordinary life
- 7 Definite abnormality in general area of coding, but not of type specified
- 8 Not applicable
- 9 Not known

## Administration: Features of ADOS-2

- creates a “social world” in which behaviors related to the autism spectrum can be observed if they occur
- Prompts or created opportunities for these behaviours
- Essentially, increasing likelihood of their occurrence during observation
- Structured hierarchy / some flexibility

## ADOS-2 Toddler Module Activities

- Free Play – including Free Play Ball
- Blocking Toy Play
- Response to Name
- Bubble Play – including Teasing Toy Play
- Anticipation of Routine with Objects – including Unable Toy Play
- Response to Joint Attention
- Responsive Social Smile
- Anticipation of Social Routine
- Functional and Symbolic Imitation
- Bath Time – including Bath Time Ignore
- Snack

## ADOS-2 Module One Activities

- Free Play
- Response to Name
- Response to Joint Attention
- Bubble Play
- Anticipation of Routine with Objects
- Responsive Social Smile
- Anticipation of Social Routine
- Functional and Symbolic Imitation
- Birthday Party
- Snack

## ADOS-2 Module Two Activities

- Construction Task
- Response to Name
- Make Believe Play
- Joint Interactive Play
- Conversation
- Response to Joint Attention
- Demonstration Task
- Description of Picture
- Telling a Story from a Book
- Free Play
- Birthday Party
- Snack
- Anticipation of Routine with objects
- Bubble Play

### ADOS-2 Module Three Activities

- Construction Task
- Make Believe Play
- Joint Interactive Play
- Demonstration Task
- Description of Picture
- Telling a Story from a Book
- Cartoons
- Conversation and Reporting
- Emotions
- Social Difficulties and Annoyance
- Break
- Friends and Marriage
- Loneliness
- Creating a Story

### ADOS-2 Module Four Activities

- Construction Task\*
- Telling a Story from a Book
- Description of Picture\*
- Conversation and Reporting
- Current Work or School\*
- Social Difficulties and Annoyance
- Emotions
- Demonstration Task
- Cartoons\*
- Break
- Daily Living\*
- Friends and Marriage
- Loneliness
- Plans and Hopes
- Creating a Story

### Additional Notes on Administration

- Read the information with items
- Order is flexible
- Be prepared for opportunistic administrations (clinical)
- Be aware of ability related items and codings

### Coding and Classification: Diagnostic Challenges

- Overlap in ASD / developmental delay / PD / psychiatric conditions
- Inter-personal variability in presentation
- Intra-personal (developmental) variability
- Broad criteria
- Variable interpretations of behaviours of interest

## Addressing the Diagnostic Challenges

- Overlap
- Inter-personal variability
- Intra-personal
- Broad criteria
- Variable interpretations of behaviours of interest
- Algorithm for classification
- Modular assessment
- Structured activities
- Operationalised descriptions
- Standardisation / Training

## Diagnostic Algorithm

For selected items: algorithms for diagnosis

- ADI-R: Autism (incl. Atypical Autism, and PDD-NOS) vs. Non-Autism
- ADOS-2: Autism vs. ASD/Atypical / PDD-NOS vs. Non-Autism

Not specific to Asperger's Syndromes: insufficient information

For items scored

- 0 Remains as 0
- 1 Remains as 1
- 2 Remains as 2
- 3 Becomes 2
- 7 Becomes 0
- 8 Becomes 0
- 9 Becomes 0

## ADOS-2 Scoring and Classification

When the item codes are transferred to page 23 of the Protocol Booklet, they are converted to algorithm scores as shown.

Code Assigned	Algorithm Score
0	Unchanged as: 0
1	Unchanged as: 1*
2	Unchanged as: 2
3	Converts to: 2
7	Converts to: 0
8	
9	

\* there is one exception to this in the Toddler Module

## ADOS-2 Scoring and Classification

### Module 1

The algorithm process in Modules 1, 2, 3 and 4 leads to an ADOS-2 classification of **autism**, **autism spectrum** or **non-spectrum**.

### Module 2

### Module 3

The process also generates a comparison score indicating one of four levels of autism spectrum-related symptoms: **high**, **moderate**, **low**, **minimal-to-no-evidence**.

### Module 4

### Module T

The algorithm process for the Toddler Module leads to an ADOS-2 **Range of Concern**.

### Exercise Scores

#### Toddler

- Oliver: SA 13 RRB 4 Total 17 Moderate-to-Severe

#### Module One

- Darren: SA 15 RRB 3 Total 18 Autism CS: 8 High

#### Module Two

- Penny: SA 5 RRB 2 Total 7 Non-ASD CS: 3 Low

#### Module Three

- Sarah: SA 8 RRB 6 Total 14 Autism CS: 8 High

- Brian: SA 4 RRB 3 Total 7 ASD CS: 4 Low

- Bruce: SA 4 RRB 2 Total 6 Non-ASD CS: 3 Low

### Exercise Scores: Module Four

#### Module Four

- Kevin: Comm 2 RSI 4 Total 10 Non-ASD
- Cindy: Comm 3 RSI 7 Total 10 Autism
- Ahmed: Comm 2 RSI 5 Total 7 ASD

Remember M4 uses only:

Communication Total

RSI Total

Communication + RSI Totals

Must meet criterion on all three

### Diagnosis and Classification - ADOS-2 Cut-Offs

- Cut-offs are module specific
- For Modules 1 to 4 three scores
  - M1 to M3 : SA (comm. + RSI), RRB and Overall Total
  - M4 : Communication, RSI and Total (Comm+RSI)
- For Modules 1 to 3 only one cut-off score – Overall Total
- For Module Four 3 cut-offs Communication RSI and Total
- Comparison Score allows comparisons
  - Between same child on different modules
  - Between different children

### Calculating Consensus

- Code all Items 0 – 3, 7, 8 or 9
- Establish consensus score for each item
- Compare your score to consensus for:
  - Total Item Set
  - Algorithm Item Set
- Calculate agreement proportion
  - Denominator excludes consensus scores > 3
  - Numerator is the number of agreements
  - 3 vs. 2 (and vice versa) count as agreements
- Multiply by 100 for consensus percentage

### Item Sets by Module

- Toddler Module
  - total item set = 41; algorithm item set = 14
- Module One
  - total item set = 34; algorithm item set = 14
- Module Two
  - total item set = 29; algorithm item set = 14
- Module Three
  - total item set = 29; algorithm item set = 14
- Module Four
  - total item set = 32; algorithm item set = 16

### Coding Items

- Summary vs. Specific
  - Gathered throughout the session as a whole
  - Social Overtures and Responses, Rapport, Conversation, Reciprocal Social Communication
  - Specific – early modules – RJA, RSS
- Majority vs. Best
  - Take the majority of examples – not just the best (or vv).
  - Conversation vs. Reporting of Events
- High Incidence vs. Low Incidence
  - Several means 3; frequent, take base estimate or proportion
- Same title different content
  - Early Modules: Pointing, Gestures

### Coding Items

- Directed to Examiner or Other
  - Early modules: MT to M2 need another person
  - Any others (student, assistant, not considered in coding)
- Functional vs Imaginative Play
  - Functional includes using objects directly as intended; representational play and constructional play
  - Symbolic involves symbolic use of objects and pretense; using figures as agents of action; in Creating a Story using the lace as spaghetti
- Initiation of Joint Attention
  - 3 point gaze shift; not holding; for interest

### Social Overtures and Social Responses

- Social Overture
  - Behaviour initiated/maintained by examinee directed at examiner with purpose of communicating social intent
  - Eye-contact, facial expression, touching, addressing verbally
  - Subtle (checking in with eye-contact); overt (its your turn now)
  - Poor quality (hold hand out for pieces); good quality (ask with ec / smile)
- Social Response
  - As above but in response to a direct approach (subtle or otherwise) by examiner
- Differences for Coding
  - Don't code ABSENCE of Social Overtures as unusual in the quality items. A social overture cannot be *expected*
  - Do code absence of Social Response. A response *can* be expected



## Functional Play

### Functional

- Use of toys / objects in way intended
- Catch / stacking blocks/reading a book / racing toy cars / talking into a toy telephone
- Representational/ miniatures: Toy telephones, toy cars, vehicle (dump truck), utensils, doll furniture, purse, tools, key ring, pretend food, toy rocket and teapot
- Cause Effect : require action: Jack-in-a-Box, balls, pop-ups
- Construction: primary purpose is stacking or building

### Scoring

- Driving the truck around, (vs. rolling it slightly), phone to ear (vs. pushing a button).

## Symbolic Play

### Imaginative / Symbolic

- Use of toys / objects in ways not obviously intended
- Yarn as spaghetti / measuring cup as bath-tub
- Can be same toys as functional but INTENT is different
- Anything that involves a figure or doll in an action
- Giving 'play-doh' to doll as cake or cup to doll as 'drink

### Scoring

- 'Little' spontaneous – judge according to age expectations
- Always repetitive would be 2
- No use of figures or doll excludes 0
- One use of doll and nothing else 2 (early Mods)
- One use of object in Creating a Story – convention = 1

## Coding: Pointing Toddler and Module 1

0 = A distal point with an index finger and co-ordinated gaze or vocalisation for Request or Interest (x2)

1 = Less flexible or frequent

- Distal with absence of any others
- No index finger but presence of all others
- Points only to self or other person
- Touching with co-ordinated gaze / vocalisation
- All other aspects correct but one time only

2 = Proximal only without co-ordinated gaze or vocalisation

3 = No pointing

## Coding: Module 2

0 = Interest: Index Finger: Distal: Co-ordinated Gaze (x2)

1 = any of the following:

- Express Interest no co-ordinated gaze
- Express Interest with gaze but no index finger
- Express Interest, with gaze and index but not distal
- Not to express interest (i.e. request) but co-ordinated gaze
- Points only to self or other person

2 = Request only without Co-ordinated Gaze

3 = No pointing

### Coding Descriptive and Other Gestures (M2 – M4)

- 0 = three or more descriptive, more than one of them outside Demo Task
- 1 as follows:
  - three descriptive gestures but all in one task,
  - two descriptive gestures anywhere
  - at least descriptive, with three or more other gestures
- 2 = one descriptive, with two other gestures
- 3 = only one gesture of any kind

### Special Groups

- Learning Disability / Limited Speech
  - M1 and M2 age-inappropriate materials
  - Standardised on children
  - Inappropriate assumptions re communicative intent
  - Adapted ADOS
- Forensic / Secure Environments
  - M3 and M4
  - Security issues / kit / questions
- Local Issues

### Some FAQs

- Age Range: from 12m to adulthood
  - NV developmental age  $\geq 12m$ , walk independently
- Ability: from 12m to adulthood
  - Caution re Module One with pre-verbal adults
  - Berument, Starr, Pickles, Tomlins, Papanikolaou, Lord et al. (2005). Pre-linguistic autism diagnostic observation schedule adapted for older individuals with severe to profound mental retardation: A pilot study. *Journal of Autism and Developmental Disorders*, 35(6), 821-829.
  - list of recommended materials for adults and adolescents who need a Module 1 or 2, available from WPS

### Some FAQs (cont.)

- Use with deaf children: not standardised
  - Use as clinical tool, materials often relevant for informal/qualitative use
- Repeat Administrations
  - Slight practice effects on scored responses
  - Repetitive behaviours score higher
  - Social behaviours score lower
  - 2-3 months apart, minimal effect on overall score or classifications
  - Parents teach
- Administer at home or in clinic
  - Either. Clinic / research centre preferable
  - Clear instructions prior to home visit: space; bubbles; no sibs; no noise
  - Children with ASD usually respond better to greater structure

### Single Administration

- ADOS / ADOS-2 standardised for single admin
- Training / practice include an observer
- Observer doesn't code
- Consensus meetings for calibration
- Dual admin non-standardised
  - lower default score
  - interferes with social engagement
  - observe more / affects standardisation stats

### Discussion points

- Early Diagnosis (DD from Attachment issues, SLI, ADD)
- Differential Diagnosis / Attachment / SLI / PD
- English as second language
- Special groups: Forensic populations, Non-verbal adults
- Women / girls with ASD
- Impact of LD / other conditions (e.g. DS) on Validity
- Comorbidity or not
- Prevalence
- Evaluating Treatment Outcomes: Single Case vs. RCTs
- Embedding into practice – not dual admin
- Report Writing

### ADOS-1 to ADOS-2

- Administration is essentially identical
- Toddler Module introduced
- TM has two algorithms
  - All Younger (12- 20m) + Older with Few Words (3 or 4 on A1 - <5 words)
  - Older with some words (21m or older)
- M1 and M2 have two algorithms
  - M1: Language: few or No Words vs Some Words
  - M2: Age: Younger than 5 vs 5 or older
- Modules 3 and 4 have one algorithm

### ADOS-1 to ADOS-2

- Age Range extended downwards to 12m
- Cut-offs are still module specific
- For M1 – M4 there are three summary scores
  - M1 to M3 : SA (comm. + RSI), RRB and Overall Total
  - M4 : Communication, RSI and Total (Comm+RSI)
- For Modules 1 to 3 only one is compared to a cut-off
- Overall Total
- For Module Four 3 cut-offs Communication RSI and Total
- Comparison Score allows comparisons
  - Between same child on different modules

### Post Course- Administration Reliability

- Must reach reliability for research administration
- Return coded and taped administrations as required
- On the full item set and on algorithm items
- Code appropriately
- 2/3 = 2; anything above 3 becomes 0
- Compare your code to trainers
- 80% agreement for ADOS-2; 90% for ADI-R

### Supplementary Slides: Activities and Codes: M4

- Telling a Story from a Book
  - As M2 plus: B6: Comments on Others Emotions, C1 Creativity
- Conversation /Reporting
  - As M2 plus: A7: Reporting an Event, B5: Communication Own Affect B5; Others Emotions B6, Insight B7; Summary Items B9-B13
- Current Work or School
  - As Conversation /Reporting plus Responsibility B8
- Social Difficulties and Annoyance
  - As Conversation /Reporting plus Insight B7, Responsibility B8

### Supplementary Slides: Activities and Codes: M2

- Construction Task
  - Initial language: A1-A4; Pointing: A6; Desc Gest. :A7 Eye-Contact: B1; Facial Expression: B2; Summary B8-B12; Creativity: C2; D1-D4
- Response to Name:
  - B4
- Make Believe Play
  - Initial language: A1-A4; Pointing: A6; Desc Gest. :A7 Eye-Contact: B1; Facial Expression: B2; Showing B4: Response to Name; B5: Showing; B6 Initiation Joint Attention; Summary B8-B12; Creativity: C2; D1-D4
- Joint Interactive Play
  - As Make Believe – plus B3: Shared Enjoyment

### Supplementary Slides : Activities and Codes: M2

- Conversation
  - Language: A1-A5; Gesture: A7, Eye-Contact: B1; Facial Expression: B2; Summary B8-B12; Repetitive Interests: D4
- Response to Joint Attention
  - Own Code: B7
- Demonstration Task
  - Descriptive Gestures: A7
- Description of a Picture
  - Language: A1-A5; Eye-Contact: B1; Facial Expression: B2; Summary B8-B12; Repetitive Interests: D4

### Supplementary Slides : Activities and Codes: M2

- Telling Story from Book
  - Language: A1-A5; Gesture: A7; Eye-Contact: B1; Facial Expression: B2; Summary B8-B12; Repetitive Interests: D4
- Free Play
  - Language: A1-A5; Gesture: A7; Eye-Contact: B1; Facial Expression: B3: Shared Enjoyment, B5: Showing; B6: Initiation JA, B2; Summary B8-B12; Functional Play: C1, Creative/Imaginative Play: C2; Repetitive Interests: D4
- Birthday Party
  - Shared Enjoyment: B5; Showing: B6; Functional Play: C1, Creative / Imaginative Play: C2

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### Supplementary Slides : Activities and Codes: M2

- Snack
  - A6: Pointing, Summary: B8-B12
- Anticipation Routine with Objects
  - Gesture: A7; Eye-Contact: B1; Facial Expression: B3: Shared Enjoyment, B5: Showing; B6: Initiation JA, B2; Summary B8-B12
- Bubble Play
  - Gesture: A7; Eye-Contact: B1; Facial Expression: B3: Shared Enjoyment, B5: Showing; B6: Initiation JA, B2; Summary B8-B12 C1: Functional Play

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### Supplementary Slides: Activities and Codes: M4

- Emotions
  - As Conversation/Reporting plus B5: Communication Own Affect, B6: Comments on Others Emotions
- Demonstration Task
  - Descriptive Gestures A9, Emphatic Emotional Gestures A10, Reporting an Event A7, Summary Items B9-B13
- Cartoons
  - Descriptive Gestures A9, Emphatic Emotional Gestures A10, Summary Items B9 – B13

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### Supplementary Slides: Activities and Codes: M4

- Break
  - Summary Items B9-B13 particularly B9 – B12
- Daily Living
  - As Conversation and Reporting plus Responsibility- B8
- Friends, Relationships and Marriage
  - As Conversation and Reporting particularly B5 – B8
- Loneliness
  - As Conversation and Reporting particularly Emotions in Others B6
- Plans and Hopes
  - As Conversation and Reporting plus Responsibility B8
- Creating a Story – C1

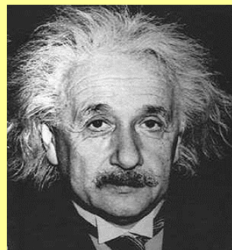
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## Einstein and Measurement

Not everything that is important can be measured and not everything that can be measured is important'

Albert Einstein



## Research Slides: What, Why and How Many?

It seemed to me that you have to know the 'what' before deciding on the 'why'

Leo Kanner in 'Infantile Autism': Rimland, 1962

And before deciding on the 'how many'....?



Leo Kanner

## Classification for Research

Prevalence – of?

- Case-description – what are we counting

Causality – of?

- Case-description – x caused what?

Treatment evaluation

- What aspect of presentation are we treating
- How are we measuring outcome
- What constitutes a change – statistical or clinical
- How are we defining treatment success

## PKU ...and how the RCT would have missed it

Phenylketoneuria

- Genetic – autosomal recessive disorder
- Mutation in gene for phenylalanine hydroxylase (PAH) – metabolises phenylalanine to tyrosine
- Mutation renders PAH non-functional
- Phenylalanine (Phe) appears in urine
- Non-metabolised Phe is toxic
- Testable
- Untreated severe MR + Autistic traits
- Treated – normal development
- Treatment – strict Phe restricted diet

## PKU ...and how the RCT would have missed it

### Phenylketoneuria

- Recognised clinically
- Testable by neonatal heel-prick
- Phe exclusion diet – otherwise autism

### Dietary exclusion alone

- All newborns or randomly selected group
- Half given exclusion diet; half normal diet
- Autism as outcome
- Several in both groups with autism - 2 fewer in (a)
- Difference in effect size – minimal; p value 0.7
- Treatment doesn't work – carry on with the Phe

## Prevalence of Autism Spectrum Conditions: UK school-based population study

Baron-Cohen et al. British Journal of Psychiatry (2009) 194 -

### Representative Sample Selection

- all schools within Cambs, including mainstream and special schools in both private and state sectors

### Screening

- well validated peer-reviewed screening questionnaire
- published psychometric properties:
- good test-retest reliability,
- specificity ( 97%) sensitivity (100%) vs. ADOS-2 and ADI-R
- well documented cut-off (>15), plus random 33% borderline (12-14)

### Case Definition

- clearly stated and Based on standardised interview – ADI-R
- direct observation
- clinical judgment / consensus diagnosis

## The ScanBrit randomised, controlled, single-blind study of a gluten- and casein-free dietary intervention for children with autism spectrum disorders

Whitely et al. (2010) Nutritional Neuroscience 13(2): 87-100

### Sample and Design

- Two-stage 24 month RCT
- adaptive catch-up with interim analysis
- 72 Danish children aged 4 – 10 yrs 11 months
- Assigned to diet (A) or non-diet (B)

### Measures

- ADOS-2 and Gilliam Autism Rating Scale - core autism behaviours
- Vineland Adaptive Behaviour Scale - developmental level
- Attention Deficit Hyperactivity Disorder-IV Scale – inattention and hyperactivity

## The ScanBrit study (cont.)

### Stage One

- Tested at baseline 8 and 12 months
- Data on 26 diet and 29 controls available for analysis
- Significant improvement to mean diet group scores on sub-domains of ADOS-2, GARS and ADHD-IV

### Stage Two

- 18 Group A continued; 17 Group B re-assigned
- Inter- and intra-group comparisons
- Some evidence of sustained clinical group improvements
- Plateau effect of treatment

### Conclusion

- Dietary intervention may possibly affect developmental outcome for ASD children
- Caution in absence of placebo control

### Improved diagnostic validity of the ADOS-2 revised algorithms: a replication study in an independent sample

Oosterling et al. *J Autism Developmental Disorders* (2010) 40(6) 689 - 703

#### Aims and Sample

- Replicate predictive validity, factor structure, and correlations with age, VIQ, NVIQ
- ADOS-2 revised algorithms for Modules 1 and 2
- Dutch children (n=532)

#### Results and Conclusions

- Improvements in diagnostic validity most apparent for autism
- Support the use of revised algorithms
- Use of similar items across developmental cells
- Easier to compare scores between and within individuals

### A Replication of the ADOS-2 Revised Algorithms

Gotham et al. (2008) *J American Academy Child and Adolescent Psychiatry* 47(6): 642-651.

#### Objective

- Replicate original factor structure and predictive validity using revised ADOS-2 algorithms in an independent dataset (N = 1,282).

#### Method

- Algorithm revisions applied to 18 m to 16yr age-range
- 11 North American CPEA & AART sites

#### Results

- Sensitivities and specificities  $\geq$  old algorithms
- Except for young children with phrased-speech and PDD-NOS.

#### Conclusions

- revised algorithms increase comparability between modules and
- improve the predictive validity of the ADOS-2 for autism

### Diagnosing Autism Spectrum Disorders in Adults: Use of ADOS-2 Module 4

Bastiaansen, et al. (2010) *Journal of Autism and Developmental Disorders* (online DOI 10.1007/s10803-010-1157-x)

#### Aims and Sample

- to evaluate reliability and predictive validity of ADOS-2 M4
- high-functioning adult ASD males
- schizophrenia, psychopathy, typical development.

#### Results and Conclusions

- ADOS-2 M4 demonstrated reliability and predictive validity
- discriminated ASD from psychopathy and typical development,
- less specific re schizophrenia
- latter groups differed on some core items
- explorative analyses indicate that a revision as per Gotham et al. 2007 (JADD 37: 613-627, 2007) potentially beneficial