AD/HD WITHIN A CLINICAL SAMPLE OF INDIVIDUALS WITH FRAGILE X SYNDROME

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AGENDA:

- 1. Rate of ADHD in FXS sample
- 2. Comorbid conditions in sample
- 3. ADHD conceptualization for diagnosis
- 4. Clinical practice implications

FRAGILE X SAMPLE:

- Masters of Psychology (clinical psychology)
- University ethics committee approval granted

Participants

- Fragile X Syndrome; N= 114; PM or FM
- Retrospective de-identified data -between the years of 1998 and July 2011 (~13 years)
- Prior consent for inclusion as study data & one+ DSM-IV TR AD/HD checklist completed

DEMOGRAPHICS:

- Age range 2 to 56 years, *m*= 15.28 (*SD* = 13.12)
- More Males 71.1 % than females 28.9%
- 86% Full mutation expansion (64%males)
- 75% children and adolescents (46% below 10 yrs)
- Delay status:

Table2: Values for FSIQ and V-Total by Delay Status and Sex
NA = not applicable, as there were no males with "no delay" who had a completed Vineland score;
FSIQ= Full Scale IQ, from a Wechsler Intelligence Test;
VTotal= Vineland Adaptive Behaviour Total Score.

	Delay Status					
	No Delay		Mild		Significant	
	Male	Female	Male	Female	Male	Female
FSIQ	92	92	64	67	47	46
V.Total	NA	78	61	66	37	42
N	9	10	13	11	59	12

TABLE 1: AGE GROUP BY MUTATION STATUS & AGE

	Genetic State			
	Pre-Mutation		Full Mutation	
Age Group (Years)	Male	Female	Male	Female
9 & below	4	6	33	9
10-19	3	2	22	8
Children n =	7	8	55	17
20-29	0	0	5	3
30-39	0	1	7	2
40-49	0	0	3	2
50 & Above	0	0	4	0
Adult n =	0	1	19	7
n =	7	9	74	24

FIRSTLY: ADHD RATE

- DSM-IV-TR ADHD Checklist
- Parent & Outside witness reports (eg. teacher)

Overall:

- 62% of FXS sample have ‘case’ of ADHD
- 78 to 81% had notable traits of AD/HD

SIGNIFICANT RELATIONSHIPS:

- Outside witness report= No significant difference by sex
- Parent report: **Sig. sex diff** for Hyperactive-Impulsive. The females (*M* = 10.87, *SD* = 7.72) were rated lower than males (*M* = 13.87, *SD* = 6.67; *t* (108) = 2.04, *p* = .05, two -tailed) Effect size moderate (eta squared = .04; mean difference = 3.00, 95% *CI* = .07 to 5.94).

- No significant relationship between delay status and AD/HD ratings within this sample.

ADHD IN SAMPLE : OVERALL BY SEX & AGE GROUP

Rater	Male %	Female %	Total %	Child %	Adolescent %	Adult %
Parent Report AD/HD Overall State (n =110*)						
None	13.6	8.2	**21.8**	13.7	18.8	40.7
At Risk	10.9	3.6	**14.5**	15.7	18.7	7.4
AD/HD Case	47.3	16.4	**63.7**	70.6	62.5	51.9
Outside Witness AD/HD Overall State (n = 88*)						
None	11.3	8.0	**19.3**	10.3	28.1	23.6
At Risk	12.5	5.7	**18.2**	20.5	15.6	17.6
AD/HD Case	46.6	15.9	**62.5**	69.2	56.3	58.8

Overall AD/HD Ratings by Sex and Age Group
N = 114 * = Within this sample there were 84 individuals with both a parental and a carer report;
AD/HD Case= satisfied a minimum 6 of 9 Criteria A for one of the subtypes, Other criteria not considered at this time.
At Risk = endorsed 4 or 5 criteria of 9 Criteria A

INATTENTIVE RATINGS BY SEX & AGE GROUP

Rater	Male %	Female %	Total %	Child %	Adolescent %	Adult %
Parent Report Inattentive State (n =110*)						
None	11.8	7.3	**19.1**	9.8	21.9	33.3
At Risk	20.0	5.5	**25.5**	29.4	25.0	18.5
AD/HD Case	40.0	15.5	**55.5**	60.8	53.1	48.2
Outside Witness Inattentive State (n = 88*)						
None	9.1	5.7	**14.8**	7.7	18.8	23.5
At Risk	19.2	8.0	**27.2**	20.5	34.4	29.4
AD/HD Case	42.1	15.9	**58.0**	71.8	46.8	47.1

N = 114
* = Within this sample there were 84 individuals with both a parental and a carer report;
AD/HD Case= satisfied a minimum 6 of 9 Criteria A1 for this subtype, other criteria not considered at this time.
At Risk = 4 or 5 endorsed for Criteria A 1

HYPERACTIVITY/IMPULSIVITY BY SEX & AGE GROUP

Rater	Male %	Female %	Total %	Child %	Adolescent %	Adult %
Parent Report Hyperactivity- Impulsivity State (n =110*)						
None	27.3	12.7	**40.0**	27.5	31.3	59.3
At Risk	18.1	5.5	**23.6**	15.7	34.4	18.5
AD/HD Case	26.4	10.0	**36.4**	56.8	34.3	22.2
Outside Witness Hyperactivity- impulsivity State (n = 88*)						
None	31.8	13.6	**45.4**	35.9	40.6	35.3
At Risk	18.2	5.7	**23.9**	23.1	21.9	11.8
AD/HD Case	20.5	10.2	**30.7**	41.0	37.5	52.9

N = 114

* = Within this sample there were 84 individuals with both a parental and a carer report;

AD/HD Case= satisfied a minimum 6 of 9 Criteria A2 for this subtype, other criteria not considered at this time.

At Risk = 4 or 5 endorsed for Criteria A 2

2ND: COMORBID MENTAL HEALTH CONDITIONS

Mental Health Condition	Child % (n=52)	Adolescent % (n =35)	Adult % (n =27)	Overall %	r
Anxiety	57.7	68.6	92.6	**69.3**	**.29****
ASD	25.0	17.1	7.4	**18.4**	-.18
Mood Disturb.	0	5.7	22.2	**7.0**	**.33****
Other Cond.	19.2	20.0	48.1	**26.3**	-

N = 114; ASD= Autism Spectrum Disorder;
** correlation is significant at the 0.01 level

Age group:

- Positively correlated with both anxiety and mood disturbance
- Not significantly related to Autism spectrum disorder

Sex:

- No significant relationship

'Other conditions':

- Relatively common (26.3%)
  - including health problems (*n* = 8, e.g., asthma, diabetes and high blood pressure);
  - problems with aggression,
  - behaviours (eg., tantrums or outbursts),
  - mood instability (*n* = 17),
  - and epilepsy (*n* = 5), although these are not all mental health conditions,
  - **many required medication for management

3RD: ADHD CRITERIA CONCEPTUALIZATION

- Current DSM-IV-TR AD/HD criteria A list of symptoms congregate into two primary cohesive factors
- FXS sample: A principal component analysis (PCA) completed (using SPSS V.19).
- The parent DSM-IV TR report data explored with a PCA and suitability was assessed as positive (KMO = .89; Bartlett's ToS X^2 (153) = 975.44, p = .000).
- The outside witness data achieved similar suitability results.

- An exploratory factor analysis, two-component solution, with oblimin rotation was then conducted.
- Tables show the factor loadings for both the parent and outside witness ratings of the DSM-IV TR Criteria- A components.

PARENT EXPLORATORY FACTOR ANALYSIS

	Component Coefficients	
	1	2
Plays Quietly (Hyp4)	.79	-.19
'Driven by motor' (Hyp5)	.77	-.13
Leaves Seat (Hyp2)	.74	-.11
Waiting Turn (Imp2)	.72	-.36
Runs, climbs (Hyp3)	.71	-.20
Interrupts Intrudes (Imp3)	.70	-.50
Follow Through (Att4)	.70	.19
Easily distracted (Att8)	.68	.08
Fidgets (Hyp1)	.67	-.01
Sustains Attention (Att2)	.63	.54
Talks A Lot (Hyp6)	.62	-.33
Close Attention (Att1)	.60	.51
Forgetful (Att9)	.60	.14
Organizing (Att5)	.58	.29
Sustain Mental Effort (Att6)	.55	.42
Loses Things (Att7)	.55	-.01
Listens (Att3)	.54	.35
Blurts Answers (Imp1)	.45	-.47
Eigenvalues	7.58	1.80
% Variance	42.1	10.0

Parent AD/HD Report
2- Factor Exploratory Factor Analysis
N = 110
a: Extraction method: Principal Component Analysis, 2 components extracted.
Att= The criteria A items for Attention difficulties (Inattention);
Hyp= Criteria A items for Hyperactivity;
Imp= Criteria A items for Impulsivity.

OUTSIDE WITNESS EXPLORATORY FACTOR ANALYSIS

	Component Coefficients	
	1	2
Sustain Attention (Att2)	.77	-.32
Waiting Turn (Imp2)	.75	.36
Easily Distracted (Att8)	.73	-.09
Runs, Climbs (Hyp3)	.72	.08
Plays Quietly (Hyp4)	.72	.25
Close Attention (Att1)	.72	-.35
Interrupts Intrudes (Imp3)	.70	.50
Listens (Att3)	.69	-.30
Follow Through (Att4)	.68	-.20
Organizing (Att5)	.68	-.36
Fidgets (Hyp1)	.67	.02
Leaves Seat (Hyp2)	.66	-.09
Sustain Mental Effort (Att6)	.65	-.17
Loses Things (Att7)	.63	-.21
'Driven by Motor' (Hyp5)	.63	.36
Talks A Lot (Hyp6)	.55	.52
Blurts Answers (Imp1)	.53	.47
Forgetful (Att9)	.53	-.32
Eigenvalues	8.07	1.74
% Variance	44.81	9.65

Outside Witness AD/HD Report
2- Factor Exploratory Factor Analysis
N = 88
a: Extraction method: Principal Component Analysis, 2 components extracted.
Att= The criteria A items for Attention difficulties (Inattention); Hyp= Criteria A items for Hyperactivity;
Imp= Criteria A items for Impulsivity.

OF NOTE:

- The AD/HD DSM-IV TR criteria are applicable to this FXS -developmentally disabled population
- A single factor model appears to apply to this sample.
- A “general ‘g’ factor” posited by Martel, Von Eye, and Nigg (2010, p.906) via a “bi-factor model” of AD/HD
  - All criteria symptoms load as an overall risk
  - Secondly “specific factor components” (Inatt or Hyp/Imp) suggest individual presentation.
- ? Best ‘fit’ for clinical practice in this FXS sample ?
- Facilitates the different etiological processes, differential assessment, and tailoring of treatment to individual profiles.

FUTURE CLINICAL PRACTICE:

Clinicians need to:

- Aware of high rates of ADHD across all ages
- Aware of high rates of anxiety & mood disturbance
- Conceptualize ADHD criteria as indicative of risk, and possible need for interventions

- Thank You for Listening.