Kaohsiung Municipal
Kai-Syuan Psychiatric Hospital

Relationship Between Executive Function and Broader Autism of ASD: comparison with ADHD and TD sibling in Southern Taiwan

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Background

- Autism Spectrum Disorder(ASD) is currently no known cause, also is a complex neuro-developmental disorders, evidence suggests that the cause is highly genetic with multifactorial risk factors that interact leading to changes in brain development(Lee, 2011；Woolfenden, Sarkozy, Ridley,& Williams, 2012).
- The broader autism phenotype (BAP) is a set of trait and language characteristics that reflect the phenotypic expression of the genetic liability to autism, in non -autistic relatives of autistic individuals. The impairments, deficits in reading comprehension, and higher rates of repetitive, executive attention deficits and obsessive-compulsive behaviors (Hurley et al., 2007; Keith & Kathleen, 2011).
- Base on our status quo which is first degree prevention and second degree promotion, professionals who take care of mental illness patients are limited in institutional care, such as hospitalized psychosis. They rarely pay attention to health promotion. Researches have indicated that ADHD and ASD are complicated, chronicle and multi-genetic neurodevelopmental disorders.

Aims

- The objectives of this study were to compare the siblings with ASD, ADHD and TD children's broader autism phenotype.

Methods

- This study was a cross-sectional case-control survey. 69 participants will be considered as the appropriate sample size for each groups, including ASD, ADHD, and the TD sample group. This study was approved by the Psychiatric Hospital Institutional Review Board (IRB).
- Demographic characteristics, Wisconsin Card Sorting Test-computer Version 4 (WCST-CV4), Autism-spectrum Quotient (AQ) were used for the siblings with ASD, ADHD, and TD groups.

Implications for practice

- Parents and Nursing providers should pay more attention to sibling broader autism phenotype issues in the future. The broader autism phenotype infants and toddlers that should consider to the early intervention services in the developmental milestones.

Key words: Broader autism phenotype, Autistic spectrum disorder, Ececutive Function

Table 1. Demographic information for the groups（N=69）

Demographics	Control group			X^2	*P* value
	ASD（*n*=19）	ADHD（*n*=18）	TD（*n*=32）		
Sibling					
Sex					
Male(%)	9(47.4%)	7(38.9%)	18(56.2%)	1.427	.490
Female(%)	10(52.6%)	11(61.1%)	14(43.8%)		
Age in years	12(3.0)	12.67(2.8)	11.81(11.81)	ns	ns
Mean(SD)					
Education in years					
Elementary school	9(47.4%)	8(44.4%)	19(59.4%)	3.074	.546
Junior high school	7(36.8%)	7(38.9%)	6(18.8%)		
High school	3(15.8%)	3(16.7%)	7(21.9%)		
Parents					
Sex					
Male(%)	2(10.5%)	2(11.1%)	8(25%)	2.407	.300
Female(%)	17(89.5%)	16(88.9%)	24(75%)		
Age in years					
Mean(SD)	43（6.32）	41.（4.44）	41.8（4.36）	ns	ns
Occupation					
Unemployed	8(42.1%)	7(38.9%)	5(15.6%)	11.442	.022*
Part-time	6(31.5%)	4(22.2%)	4(12.5%)		
Full-time	5(26.3%)	7(38.9%)	23(71.9%)		

Table 2. Mean WCST and Subscale Scores (and SDs) by Groups

WCST Subscale	ASD（n=19） Mean(SD)	ADHD（n=18） Mean(SD)	TD（n=32） Mean(SD)	*P* value	Post Hoc
Total number correct, NC	98.21 (11.07)	98.39 (9.91)	94.97 (13.94)	.533	-
Total errors	30.37 (10.36)	29.61 (9.91)	32.56 (13.50)	.658	-
Perseverative responses, PR）	15.68 (6.64)	15.61 (5.33)	16.69 (5.70)	.766	-
Non-perseverative errors, NPE）	15.37 (6.34)	14.67 (5.79)	17.44 (10.32)	.477	-
Perseverative errors, PE	14.42 (5.68)	14.94 (4.77)	15.13 (4.98)	.892	-
Categories completed, CAT	6.37 (2,34)	6.37 (2.34)	6.41 (2.23)	.937	-
% Perseverative errors	11.27 (4.44)	11.68 (3.73)	11.87 (3.92)	.874	-
Trails to complete first category, TCFC	13.53 (7.45)	17.83 (9.32)	14.53 (7.45)	.199	-
Percent conceptual level response, CL	70.77 (11.77)	70.31 (11.73)	67.99 (14.50)	.719	-
Failure to maintain set, FM	2.21 (1.90)	2.56 (2.06)	1.38 (1.26)	.045*	ADHD> ASD> Normal
Learning –to –learn score	-1.46 (5.98)	-1.80 (4.82)	-1.33 (5.13)	.957	-

Table 3. Mean AQ and Subscale Scores (and SDs) by Groups

AQ Subscale	ASD（n=19） Mean(SD)	ADHD（n=18） Mean(SD)	TD（n=32） Mean(SD)	F	P value
Social skill	2.47（2.43）	3.17（2.12）	2.84（2.16）	.449	.640
Attention switching	4.58（1.54）	5.11（1.32）	5.06（2.27）	.495	.612
Attention to detail	4.47（1.83）	5.72（1.74）	5.03（2.04）	1.976	.147
Communication	2.63（2.34）	3.11（2.19）	2.47（2.01）	.519	.597
Imagination	3.16（2.74）	3.44（1.20）	3.09（1.69）	.196	.823
Total AQ	17.31（7.62）	20.56（4.98）	18.50（7.02）	1.098	.339

Table 4. correlation between with AQ and WCST

item	AQ (attention to detail)	WCST（perseverative responses, PR）	WCST（perseverative errors, PE）	WCST（% Perseverative errors）
AQ（attention to detail）	1			
WCST（perseverative responses, PR）	.036	1		
WCST（perseverative errors, PE）	-.006	.970**	1	
WCST（% Perseverative errors）	-.002	.968**	.999	1