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Emotional Functioning and Social Behavior in Children with ADHD

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ABSTRACT

Background: Attention-Deficit/Hyperactivity Disorder (ADHD), characterized by a combination of overactive, poorly modulated behaviour with marked inattention and lack of persistent task involvement. Barkley's model suggests that, individuals with ADHD when faced with emotionally charged situations, show greater emotional reactivity or emotional dysregulation compared to individuals without ADHD. A possible link between the symptoms and impaired executive function in individuals with ADHD and several socioemotional behaviours, including dysregulation, when investigated in earlier studies, shows that symptoms of emotional dysregulation and impaired Executive Function are related to each other. It has also been shown that children with ADHD exhibit low frustration tolerance and explosive behaviour. Research has found that children with ADHD often demonstrate poor emotional self-awareness and higher levels of externalizing behaviour problems relative to unaffected children.

Aims: The aim of the study was to find the relation between Emotional Awareness, Social Behaviour and Executive Function in children with ADHD.

Settings and Designs: 15 children with ADHD (Inattentive type) were compared with children with ADHD (Hyperactive type), and a possible link between their symptoms, impaired executive function and socio-emotional behaviours, including dysregulation was investigated using neuropsychological tests and emotional awareness and social behaviour scales. **Results:** Results indicate that there is significant relation between Executive Functioning and Emotional, Social Functioning in children with ADHD. Executive Function has been implicated for long now in the symptoms of ADHD.

Conclusion: Current research along with literature support from earlier research has also found the possible implication of deficits in Cognitive Flexibility and Planning and Emotional Dysregulation in children with ADHD.Deficits in the domain of Planning can probably explain the difficulties a child with ADHD has in engaging in appropriate Social Behaviour.

Keywords: ADHD, Executive functioning, Emotional awareness, Social behavior

INTRODUCTION

Attention-Deficit/ Hyperactivity Disorders (ADHD) are a group of disorders which are characterized by early onset; a combination of overactive, poorly modulated behaviour with marked inattention and lack of persistent task involvement; and pervasiveness over situations and persistence over time of these behavioural characteristics. It is also characterized by developmentally inappropriate inattention, impulsivity, and hyperactivity which produce impairment at home and school. The worldwide ADHD prevalence rates are around 5.3% in children and adolescents and 2.5% in adults. Studies conducted show that the prevalence of ADHD in India among primary school children was found to be 11.32% [1].

Dysregulated emotion is characterized by excessive and rapidly shifting emotions, often associated with irritable and aggressive behavior [2] and high rates of comorbid oppositional defiant disorder [3,4]. ADHD has been

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recognized for many years now, yet there has been a need to re-assess the characteristics of emotional impulsiveness and deficient emotional self-regulation as core features rather than simply associated aspect of the disorder [5,6] gave a model that pointed out that the deficits in inhibition happens when individuals with ADHD are faced with emotionally charged situations, leading to greater emotional reactivity or emotional dysregulation, compared with those without ADHD. In another study, the amygdala was implicated in the regulation of emotion and the relationship between intrinsic functional connectivity (iFC) of amygdala circuits, and emotion regulation deficits in children aged 6-13 years with ADHD (n=63) and healthy controls (n=19) was evaluated using functional magnetic resonance imaging (fMRI) [7].

It has been recognized for many years now that many children with ADHD exhibit low frustration tolerance and explosive behaviour. Low frustration tolerance and explosive behaviour not only affects the child emotionally, but also affects the child's social, home and school environment. Research looking into executive functioning-which includes the maintenance of future goals, inhibitory control, working memory, and planning, has shown that these children usually have poor executive functioning and this has been linked to the impairment associated with ADHD [8,9].

Further, existing literature and various researches done in the field of ADHD also point to the importance of Executive Functioning and its implication in the disorder. Poor executive functioning, which includes the maintenance of future goals, inhibitory control, working memory, and planning, has been linked to the impairment associated with ADHD [8]. Research also explicates the deficit in Social understanding and behaviour and how it affects the relationship with family and other members of the society. It also points to the various difficulties in adjustment - in school, at home and other social situations. Along with this, the child goes through many emotional difficulties and these are manifested through the Emotional behaviour.

The question then arises is that, is there, if any, relation between Executive Functioning and Emotional Awareness as well as Social Behaviour. A possibility for a link between these aspects of a child's functioning cannot be completely ruled out. The current research is an attempt to explore this area further, to come to a better understanding of the disorder and how it affects the child and his/her environment and plan for appropriate and relevant treatment programme.

METHODS

Study design: The present study was a cross-sectional and correlational study between children diagnosed with Attention Deficit Hyperactivity Disorder, Inattentive Type and Hyperactive Type and the study spanned over a time period of 6 months. The total size of the sample was 30 with 15 in the Inattentive group and 15 in the hyperactive group. The age range of the children included in the study was between 8-12 years and children of both the gender were included. The method of neuropsychological assessment and administration of psychosocial scales was used to determine the details about the outcome on the dependent variables.

Procedure: Patients visiting the Psychiatry and Clinical Psychology out-patient department, with a diagnosis of ADHD were contacted, and their parents were briefed about the purpose of the study and consent was taken from the parent as well as the child. In order to rule out IQ deficits, the Wechsler Abbreviated Scale of Intelligence (WASI-II) was administered. To check for Inattention or Hyperactive, Conners-3 Parent rating was administered. The socio-demographic details including name, age, sex, address, religion, educational affiliation, residence and family type was then collected and the semi-structural clinical data sheet. After the initial briefing and information gathering was completed, the handedness of the patient was noted using the Edinburgh Handedness Inventory. Thereafter data was collected at on the following tests namely, Trail Making Test, Digit Vigilance Test, Digit Symbol Substitution Test, Stroop Colour and Word Test, Tower of London Test, and Strengths and Difficulties Questionnaire.

RESULTS

Table 1 shows the socio-demographic details for inattentive and hyperactive group.

Statistical analyses indicate that there is no significant difference amongst the age, and education variables of the two groups.

The variable of Mother Tongue and Medium of education was found to be same for all the groups. Statistical analysis indicates there is no significant difference among the socio-economic status, type of residence and family type of the two groups **(Table 2)**.

Table 3 shows the correlation between the neuropsychological tests and the variables of the emotional awareness questionnaire for the two groups.

Table 4 shows the correlation between the neuropsychological tests and the variables of the emotional regulation questionnaire for the two groups.

No significant statistical correlation was found between the variables.

DISCUSSION

Executive function and emotional dysregulation

Research in the past has indicated a definite deficit in emotional awareness and emotional dysregulation in children with ADHD. A recent review concluded that emotional dysregulation is highly prevalent in ADHD and is a major contributor to impairment, is associated with deficits in the recognition and/or allocation of attention to emotional

Table 1. Table showing the socio-demographic details for inattentive and hyperactive group.

Variables	Inattentive Group	Hyperactive Group	t-value	p-value
	Mean + S.D	Mean + S.D		
Age	10.67±1.54	10.13±1.36	1.01	.32
	1.87±.35	1.73±.46	6.57	.52
Year of Education	1.73±.46	4.97±1.30	1.29	.21

Table 2. Table showing the other socio-demographic details of the two groups.

Variables	Sub-Categories	Frequency+ Percentage		Chi-Value		P-Value	
		Inattentive	Hyperactive				
Socio-Economic Status	Middle	11 (73.3%)	11 (73.3%)	3.27	3.27	.071	.071
	Low	4 (26.7%)	4 (26.7%)				
Type of Residence	Urban	6 (40%)	10 (66.7%)	.819	7.60	.400	.022
	Suburban	5 (33.3%)	3 (20%)				
	Rural	4 (26.7%)	2 (13.3%)				
Family Type	Nuclear	10 (66.7%)	8 (53.3%)	1.67	2.80	.197	.247
	Joint	5 (33.3%)	3 (20%)				
	Extended	-	4 (26.7%)				

Table 3. Correlation between the neuropsychological tests and the variables of the emotional awareness questionnaire for the two groups.

Variables		EAQ-Differentiating Emotions	EAQ-Verbal Sharing	EAQ-Bodily Awareness	EAQ-Acting Out	EAQ-Attending to Others' Emotions	EAQ-Analyses of Emotions
DV-Time Taken	Pearson R Sig(2-Tailed)	.138 .466	-.102 .592	-.306 .100	-.304 .102	-.107 .572	-.079 .679
DV-Omissions		-.12 .52	**-.41** **.01**	**-.44** **.02**	**-.43** **.02**	-.24 .21	-.09 .64
TMT-A-Time Taken		-.08 .68	-.07 .73	-.17 .36	-.12 .52	-.25 .18	-.25 .18
TMT-B-Time Taken		.01 .95	.14 .47	.04 .85	.15 .44	-.21 .27	**-.45** **.01**
TMT-A-Errors		-.02 .90	-.23 .23	-.22 .24	-.24 .19	-.14 .47	.06 .76
TMT-B-Errors		-.24 .21	-.15 .44	-.16 .39	-.15 .42	-.25 .18	-.13 .49
DSS-		-.07	-.09	-.12	-.25	-.24	.05

Time Taken		.73	.64	.53	.18	.21	.81
Stroop-Word		.30 .11	.08 .69	.14 .43	-.05 .81	.09 .64	.30 .10
Stroop-Colour		-.05 .78	.08 .68	.10 .59	-.10 .59	.14 .47	.17 .38
Stroop-Colour-Word		.04 .84	.02 .93	.23 .22	.05 .78	.05 .81	-.06 .77
TOL-Trial 2-Max Moves		.10 .59	.29 .11	-.12 .54	.18 .34	.27 .14	.01 .96
TOL-Trial 2-Average Moves		.10 .59	.32 .09	-.10 .60	.22 .24	.28 .14	-.03 .86
TOL-Trial 2-Average Time		.91 .31	.06 .77	-.24 .20	-.04 .82	.16 .41	-.03 .86
TOL-Trial 3-Max Moves		-.19 .32	.08 .68	-.27 .15	-.25 .19	.06 .75	-.03 .87
TOL-Trial 3-Average Moves		-.22 .25	-.07 .73	**-.38** **.04**	-.29 .12	.07 .72	-.08 .69
TOL-Trial 3-Average Time		-.15 .44	-.19 .33	-.25 .18	-.20 .30	-.31 .10	**-.47** **.01**
TOL-Trial 4-Max Moves		-.26 .16	-.09 .66	-.08 .67	.22 .25	-.22 .25	-.09 .63
TOL-Trial 4-Average Moves		**-.41** **.02**	-.10 .60	-.21 .28	.06 .74	-.10 .60	.04 .83
TOL-Trial 4-Average Time		-.06 .77	-.27 .15	-.13 .49	-.14 .46	-.13 .49	-.23 .23
TOL-Trial 5-Min Moves		**-.41** **.02**	-.10 .60	-.21 .28	.06 .74	-.10 .60	.04 .83
TOL-Trial 5-Max Moves		-.06 .77	-.27 .15	-.13 .49	-.14 .46	-.13 .49	-.23 .23
TOL-		-.07	-.19	-.17	-.04	**-.40**	.00

Trial 5-Average Moves		.72	.31	.37	.84	**.03**	.98
TOL-Trial 5-Average Time		-.05 .80	-.07 .71	**-.41** **.03**	-.23 .22	.24 .20	.37 .20

Table 4. Correlation between the neuropsychological tests and the variables of the emotional regulation questionnaire for the two groups.

Variables		ERQ-Cognitive Reappraisal	ERQ-Expressive Suppression
DV-Time Taken	Pearson r Sig(2-ailed)	.08 .68	.04 .84
DV-Omissions		-.12 .54	-.56 .41
TMT-A-Time Taken		-.09 .65	-.18 .35
TMT-B-Time Taken		.12 .54	.08 .69
DSS-Time Taken		-.11 .58	.25 .18
Stroop-Word		-.28 .14	.01 .97
Stroop-Colour		-.03 .86	.12 .52
Stroop-Colour-Word		.05 .80	-.04 .84
TOL-Trial 2-Max Moves		-.02 .92	.12 .53
TOL-Trial 2-Average Moves		-.09 .66	.10 .60
TOL-Trial 2-Average Time		.21 .26	.04 .85
TOL-Trial 3-Max Moves		.04 .82	.21 .27
TOL-Trial 3-Average Moves		-.03 .89	.07 .73
TOL-Trial 3-Average Time		-.06 .77	-.19 .32
TOL-Trial 4-Max Moves		-.00 .10	-.01 .95
TOL-Trial 4-Average Moves		-.01 .96	.06 .74
TOL-Trial 4-Average Time		-.12 .52	-.05 .80
TOL-Trial 5-Min Moves		-.01 .96	-.06 .74

TOL-Trial 5-Max Moves		-.12 .52	-.05 .80
TOL-Trial 5-Average Moves		.15 .44	.03 .90
TOL-Trial 5-Average Time		.02 .88	-.08 .70

stimuli, implicating deficits in the striato-amygdalo-medial prefrontal cortical network, and may be ameliorated by ADHD treatment [10]. A poor emotional self-awareness has been significantly linked to the externalizing behaviour problems in children with ADHD. It has also been stated that dysregulated emotional reactivity plays an important role in this relationship [11].

These dysregulations mostly translate as problems related to behavioural inhibition and emotional inhibition. As a consequence, these children often suffer from the after effects of their dysregulated behaviours. Not often reported by the parents or the school, these children also undergo emotional turmoil due to the inability to moderate emotions; leading to a co-morbid condition that is emotional in nature in these children.

The current study found that there is a correlation between the deficits in the 'cognitive flexibility' domain and 'planning' domain and the components of emotional awareness leading to subsequent emotional dysregulation. From a neuropsychological view-point, impairment of the executive functioning like self-regulation, working memory, planning and cognitive flexibility are associated with the dorsolateral prefrontal cortex, also known as the cool brain [12]. It can thus be hypothesized that deficit in Cognitive Flexibility leads to poor self-control and the ability to adapt to situational demands. Along with a deficit in Planning makes it probably difficult for them to monitor their behaviour in a 'moment of poor self-control' and make corrections in behaviour according to the situational demands. These act as situational stressors for the ADHD child, making them further vulnerable to the display of poor emotional behaviour often in the form of externalizing behaviour.

As earlier studies have implicated Planning and Cognitive Flexibility deficits in ADHD and with the current study showing a probable link between the two; an intervention that focuses at improving the 'planning' and 'cognitive flexibility' of these children may be suggested; which may in turn help the children improve their emotional awareness and engage in less emotionally dysregulated behaviour. Research involving two different types of therapy: one which was planning focused therapy and the other was a solution focused therapy; it was found that the planning focused therapy was more promising to fill the gap in available treatment for adolescents with ADHD. Another study suggests that, a 10-day intensive mindfulness meditation retreat for adolescents with ADHD found that there were significant improvements in self-reported mindfulness, affect, attentional control and cognitive style. Thus, along with behaviour management techniques, cognitive training to help improve their planning and cognitive flexibility can also aid the children in addressing their problem areas.

Executive function and social behavior

Researches in the past have shown that there is a definite social behaviour deficit in children with ADHD. It has been observed that cases that present themselves in the clinical setups usually come with complaints of social behaviour disruptions. Parents, teachers and peers are often unable to respond appropriately to these disruptions. A general lack of awareness about how to deal with the child effectively along with problem behaviour being exhibited by the child, the child gets branded as having severe social behaviour deficits. The current study aimed to find if there is any correlation between the deficits in planning and the social behaviour deficits and subsequent difficulties. The results of the present study found that a correlation between Executive Function deficits and the deficits in Social Behaviour does exist. Further analysis of the results found that the domain of Planning was a difficult area in these children. Planning has earlier been implicated in the Executive Function deficits in children with ADHD. Planning has been defined as the identification and organization of the steps and elements needed to carry out an intention or achieve a goal. Planning is the ability to set goals, to monitor performance so as to reach the goals, and to make corrections in the course adopted, in order to ensure that the goal is attained. Goal setting involves not only identifying the final goal, but also identifying the intermediate goals which have to be attained in order to achieve the final goal. The intermediate goals may be in conformity with the final goal or may be contradictory to the final goal. The essence of planning consists of attaining a goal through a series of intermediate steps. The supervisory attentional system is involved in planning.

It can be suggested that children with ADHD often have difficulty in planning their social behaviour. Though, not all children with ADHD show planning deficits; but those who show the same have often showed school-and social functioning deficits. Due to lack of planning, these children often engage in behaviour that is not socially desirable, despite having the knowledge of what is considered as

appropriate behaviour and what is considered as inappropriate behaviour. In instances where the child is expected to control his/her impulsive behaviour and plan out how he/she behaves, a child with ADHD usually is unable achieve the control over his/her impulses and may, additionally have difficulty in planning out their behaviour according to norms and previous learning. Therefore, a probable link between the two can be suggestive of intervention that focuses at improving the 'planning' aspect in these children; which may in turn help the children execute socially appropriate behaviour.

Hence, along with behaviour management techniques, cognitive training to help improve their planning ability can also aid the children in addressing their problem areas [13]. Behaviour management techniques just address the problem behaviour of the child and mostly educate parents on how to deal with these behaviours so that the faulty behaviours can be unlearnt and adaptive behaviours can be learnt. In addition, Cognitive training will focus on the deficit area which actually may be posing as a difficulty in the path to learning of adaptive responses by the child. A recent study checked for the effectiveness of two new individual, short-term cognitive behavioural therapies (CBT) - one with the aim of improving planning skills and one with solution-focused treatment (SFT). Planning focused treatment was evaluated more positively and had marginal additional beneficial effects to SFT, filling the gap in available treatments for adolescents with ADHD. Hence, a combination of the two methods will prove to be more beneficial for the child.

CONCLUSION

The ability to focus attention and regulate behaviour is a key determinant to scholastic achievement and appropriate social behaviour. Most of the children affected with ADHD who come to the clinics often come with difficulties that have a behavioural component and are with regard to their academic progress. These children also exhibit deficits in inhibition when faced with emotionally charged situations, which in turn leads to greater emotional reactivity, as compared to those children without ADHD; making them have to face difficulties which are interpersonal in nature in all spheres of life.

The current study has been able to establish a relation between the neuropsychological deficits and emotional, social behaviour in children with ADHD. Children were found to have a difficulty in adequately planning their behaviour according to the norms. The inadequacy in planning along with difficulty in cognitive flexibility makes its further difficult for the child to adapt to his/her situational demands. Combined with their impulsivity and deficits in attention, these often manifested as socially inappropriate behaviour and emotionally dysregulated behaviour on their part.

REFERENCES

1. Venkata JA, Panicker AS (2013) Prevalence of attention deficit hyperactivity disorder in primary school children. Ind J Psychiatr 55: 338-342.
2. Stringaris A (2011) Irritability in children and adolescents: A challenge for DSM-5. Eur Child Adolesc Psychiatr 20: 61-66.
3. Stringaris A, Goodman R (2009) Longitudinal outcome of youth oppositionality: Irritable, headstrong, and hurtful behaviors have distinctive predictions. J Am Acad Child Adolesc Psychiatr 48: 404-412.
4. Halder S, Mahato A, Mukherjee R (2015) Profile of clinical comorbidities and emotional disturbances in adolescent ADHD. J Rural Community Psychiatr 2: 35-40.
5. Laufer MW, Denhoff E (1957) Hyperkinetic behavior syndrome in children. J Pediatr 50: 463-474.
6. Barkley RA (1997) Behavioral inhibition, sustained attention and executive functions: Constructing a unifying theory of ADHD. Psychol Bull 121: 65-94.
7. Hulvershorn LA, Mennes M, Castellanos FX, Di Martino A, Milham MP, et al. (2014) Abnormal amygdala functional connectivity associated with emotional lability in children with attention-deficit/hyperactivity disorder. J Am Acad Child Adolesc Psychiatr 53: 351-361.
8. Willcutt EG, Doyle AE, Nigg JT, Faraone SV, Pennington BF (2005) Validity of the executive function theory of attention-deficit/hyperactivity disorder: A meta-analytic review. Biol Psychiatr 57: 1336-1346.
9. Kotnala S, Halder S (2018) Working memory, verbal comprehension, perceptual reasoning and processing speed in ADHD and Normal children: A comparative study. J Indian Assoc Child Adolesc Ment Health 14: 60-79.
10. Shaw P, Stringaris A, Nigg J, Leibenluft E (2014) Emotion dysregulation in Attention Deficit Hyperactivity Disorder. Am J Psychiatr 171: 276-293.
11. Factor PI, Rosen PJ, Reyes RA (2016) The relation of poor emotional awareness and externalizing behavior among children with ADHD. J Atten Disord 20: 168-177.
12. Emond V, Joyal C, Poissant H (2009) Structural and functional neuroanatomy of attention-deficit hyperactivity disorder (ADHD). L'Encéphale 35: 107-114.

13. Halder S, Mahato A (2017) Efficacy of a model Attention Training program for children with ADHD. J Indian Assoc Child Adolesc Ment Health 13: 10-25.