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The Relationship of ADHD, ODD, and Parental Education with Educational Talent of Primary School Students: Large-Scale Study

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Abstract

The purpose of this study was to investigate the factors of predicting educational talent in preschool and elementary school children in Bonab city. This study is a descriptive correlational research. The statistical population were all elementary school students. Among the students a total of 1863 students were selected in which 863 (%46.4) students were female and 995(%53.6) students were male that were selected using single-stage cluster sampling. For this purpose, the talent- educational scores of preschool children who were referred to Sensing Center in the summer of 2016, were registered. The SNAP questionnaires were completed by the teachers and the data related to the parent's educational level were gathered from associated schools. The data using multiple regression with simultaneously methods were analyzed. Results indicated that, the 4 indicators of mother's educational level ($P<0.001$ ، $0.191=\beta$), father's educational level, ($P<0.001$) ، ($0.158= \beta$), attention deficit ($P<0.001$) ، ($0.368- = \beta$), impulsivity and hyperactivity ($P<0.001$) ، ($0.135= \beta$) have meaningful impact in predicting educational impact. But oppositional defiant disorder had no significant role in predicting academic talent.

Keywords: ADHD, ODD, Parental Education, Academic Talent.

Introduction

Attention deficit hyperactivity disorder (ADHD) is a common psychiatric disorder in childhood that is associated with damage in the school activity in two groups clinic- and community-based populations (Barbaresi, Katusic, Colligan, Weaver, & Jacobsen, Fischer, Barkley, Edelbrock, & Smallish. Symptoms of Childhood ADHD, associated with dysfunction in the multiple areas of school life, including poor academic performance, the number of years less education, social dysfunction and criminal behavior fee that extended from the childhood and adolescence to adulthood (Barbaris et al ,2007, Barkley, Fischer, Smallish, & Fletcher, McGee, Prior, Willams, Smart, &Sanson ,2002)

People with attention deficit and hyperactivity disorder have three basic features such as inattention, hyperactivity and impulsivity.

Ignoring that is one of the main symptoms of attention deficit and hyperactivity disorder have numerous clinical protests. Attention, have the multi-dimensional structure and as described by neuropsychological includes alertness, excitation, electing, sustained attention and the range of understanding (Strauss et al,2000). In children with attention deficit disorder, maintaining sustained attention is much more difficult than auto directing of visual information. Sustained attention, is a required skill in most activities that are highly uniform or below the surface of stimulating such as listening to monotonous lectures, doing repetitive mathematical problems doing class assignments for independent and doing hard home assignments (Barkley, Dopal and McMory,1990). Negligence structure is closely related to the distraction structure. Distraction refers to the probability of child's attention to secondary and minor, non-core and non-core business stimulus and the probability of that the children be distracted with attention deficit and hyperactivity is more than from the children without disorder (Closson,2010).it seems that, one of the fields that children with attention deficit cause to serious damages, is the academic field that special attention should be take on it.

Hyperactivity, is the second feature of attention deficit and hyperactivity disorder that clinically refers to showing sound or movement activities excessively or inappropriate with the level on individual development. Restlessness, irritability, and generally unnecessary physical gross motor movements are ordinary movements, that often reported by parents, teachers and objective measurements. Observing the children with the disorder during activities that require sustained attention demonstrated that they shake their heads more than others, wiggling more than others and occupy more space (Techer et al,1996)

Impulsivity, is the third feature of attention deficit and hyperactivity disorder and clinically defined as a low control behavior. This lack of behavioral control appears in different forms. People with attention deficit and hyperactivity disorder often responding before read a task or activity instructions, and often do not realize the consequences of their behavior or do not consider them. Unnecessary risk, is a symptom of individuals with high impulsivity, as they not consider completely the potential consequences of dangerous or destructive behavior or do not consider it at al. In this way, children with attention deficit and hyperactivity disorder are often bolder and more prepared to make challenges than peers without disturbance (Barkley,2006)

People who suffering attention Deficit Hyperactivity Disorder, also suffered in other dimensions. These dimensions including of problems in different areas of cognitive, developmental, educational and health-related (Barkley,2006). Children with this disorder are significantly have less intelligence than those without the disorder (Frazier, Demaree&Youngstrom,2004). This finding is likely due to a combination of several factors. First, children with attention deficit Hyperactivity have not a good performance in several areas of the education. Their deficits in attention, motivation, arousal, hyperactivity and impulsivity leads that attention to lessons, homework and quizzes for their optimum performance would be more difficult. Since the intelligence is partly influenced by the environment, learning and intelligence greatly affected (Closon,2010)

Academic achievement is also one of the areas that weakness of children with attention deficit and hyperactivity disorder are easily visible and decisive. Children with the disorder are more destructive in the classroom, and it is likely that their academic performance would be lower than their IQ (Biderman et al,2004). This readiness leads to destructive of children with attention deficit and hyperactivity disorder in class, to some social problems. It is assumed that the problems in focus and attention would disrupt the child's ability to function at the level of academic ability. Children with this disorder would more face with issues such as the need for private training school, fails, repeat the academic foundation and need to special training program as well as the possibility of expelling them from school is more (Dopal,2006).

The main cause of this disorder is not yet known. Recently, theorists have come to believe that multiple pathways lead to a variety and numerous protests of this disorder. Biological factors (genetics, brain damage, low stimulation), environmental factors (food, lead, tobacco and alcohol), environmental factors

(parental management and hyper stimulation), neurological malfunctions and executive functions are among the fundamental factors in the causes of this disorder.

Genetic factors are important in causing this disorder. The genes are more important in creating symptoms of attention deficit and hyperactivity disorder and transfer it from one generation to the next (Barkley,1990, Braswell et al,1997). In support of this point we can refer to behavioral pattern of negligence and hyperactivity that is more severe among identical twins than other brother and sisters (O'Conner et al,1980). Goodman and Stevenson (1989) have estimated the ability to inherit hyperactivity approximately fifty-one percent of identical twins and thirty-three percent among fraternal twins. It is worth noting that although the effects of attention deficit and hyperactivity disorder confirms inheritance in the role of biological factors in causing the disorder. The question that, what genetic changes cause the disorder remains unanswered. In another study, they also found that children whose parents were suffered from this disorder are fifty-seven percent more at risk of this disorder. In addition, the possibility of existing disorder in identical twins is more than non-identical pairs of twins have been reported (Hudziak et al,2005). All these evidences indicating a very important role that genetics plays in causing this disorder. Oppositional defiant disorder and conduct disorder, are the common attention deficit disorder and hyperactivity disorders. Since these two disorders have jointly a number of syndrome are frequently seen together on research purposes. From the studies it can be deducted that between 45 to 85 percent of children that are realized of attention deficit and hyperactivity disorder will have either alone or together full diagnostic criteria for oppositional defiant disorder, conduct disorder (Barkley, Dopal and Mcmory,1990).

The features of oppositional defiant disorder and conduct that shows them in accordance with Attention Deficit and Hyperactivity is including: lying, stealing, truancy and aggression (Closon,2010). In children with Attention Deficit and Hyperactivity Disorder and Oppositional Defiant - Conduct more impulsive behavior, hyperactivity behaviors can be seen. Also the studies of Newkorn and Halprin (Closon,2010) suggests that oppositional defiant disorder that can be seen in conduct aggressive behaviors are more caused by serotonin malfunctions in the system while dopamine systems are involved in attention deficit and hyperactivity disorder. People suffering from attention deficit hyperactivity disorder and oppositional defiant – conduct had more affected in social activities, especially in relation to peers, social cognition and social exclusion than people who are suffering only from attention deficit hyperactivity disorder and oppositional defiant disorder or conduct (Waschbusch,2002).

Various theories have insisted the role of genetic factors, environmental, neurobiological and neuropsychological in explaining and understanding attention deficit hyperactivity disorder (Quey,1997, Sergeant,2000, Sonuga-Barke,2005, Nig ,2006)

Children with attention deficit hyperactivity disorder have most frequent referral to counseling and treatment centers(Behpajhoh,2013) as make up about 50% of children referred to psychological clinics (Kaplan &Sadock,2005). In addition are in trouble, in terms of cognitive, developmental, educational, social and family (Brkley et al,2004, Milberger et al ,1997) they also have other secondary disorders that are including: Learning disabilities, depression, anxiety, aggression, conduct disorder, oppositional defiant and delinquency. These problems are not confined to childhood and a large number of pathological behaviors also continues to teens and even younger periods. For example, several studies have shown that children in the teens at greater risk for antisocial activities, and legal problems and abuse drugs (Barkley et al,2004).

Due to the fact that ADHD is one of the most common childhood disorders and have much overlap with other disorders such as learning disorders and conduct disorders and other disorders of childhood. The aim of present research is studying and determining the share of inter-family factors (the educational level of parents) and individual factors (ADHD and oppositional defiant disorder) on academic talent of first grade students.

Research Methodology

The present study is a correlation pattern type and applied research. The statistical population of the study were all elementary students of Bonab city. the health card of 1842 number child's (%74) of whole statistical society 2487 who were enrolled in 2015-16 academic year, were studied and the associated data were registered. The birth range was between October 23, 2008 and October 23, 2009. students who repeated first-grade were excluded from the study. The method of selecting sample was single-stage cluster and all first-grade students were selected from schools and the SNAP questionnaire (to measure the behavior of ADHD and oppositional defiant disorder teacher form) were completer by associated teacher for the students. The data associated to educational talent were collected from assessment data bases and data related to the level of parental education. Health and school readiness assessment process started in 1978 and has continued to the present day. School readiness test (to measure academic aptitude) is designed by Exceptional Children organization and has ten subtests for entering school for screening of students. Given that this test is available to this organization, research and psychometric data regarding the validity and reliability of the test is not available. Therefore, in this study the relevant data are calculated as follows. The correlation between scores of academic aptitude test and the Bender-Gestalt for 60 individuals, equal to 0.61, which was significant at 0.01 level.in addition the correlation between the scores of academic talent and IQ of Kesler is equal to 0.53 and that is meaningful at 0.05 level.

SNAP Test is a grading scale that is designed by Swann Son, Nolan and Pelham. The questions of this scale are designed for screening especially ADHD screening and forms of 18, 25, 26, and 90-question test is available. this useful scale is completed by the parent of children or their teacher. There are two separate scores for each sections (Brock, Jimerson and Hansen. In the present study the 26-item questionnaire form has been used. The Grading is as Likert scale (0 = no, 1 = very low, low = 2, high = 3) and the score of section for teacher's for is: attention deficit (2.56), Hyperactivity-impulsivity (1.78), ADHA (1.67), Oppositional Defiant Disorder (1.88). According to results of factor analysis for the Iranian form, the tool of subscale of hyperactivity that is %37.41 explains the total variance and the subscale of attention deficit, determines %33.78 of total variance. In addition, the Cronbach alpha for hyperactivity equals to 0.94 and for attention deficit is equal to 0.96 and for the whole scale is 0.96 and in addition Spearman Brown coefficient is equals to 0.82 (Delavar, Mohammadi and Hooshyar ,2008). The SNAP Questionnaire was completed by teachers and it was completed in two periods for 1858 students of primary school. The data were integrated with the data of health card and analyzed. In this study to assess the research goals multiple regression method was used. Various calculations and data analysis was performed using statistical software SSPS.

Findings

Kolmogorov-Smirnov test (k-s test)

The birth range was between September 23, 2008 to September 23, 2009. All subjects were enrolled in the first year of elementary school.in the table the number of sample has come according to the gender. Parents' education level are mentioned in Table 2.

Table 1: Number of samples depending on the gender

Gender	Frequency	Percent
Male	863	46.4
Female	995	53.6
total	1858	100

Table 2: Statistical Indicators for research variables

Variables of research	Number of samples	average	Variance	SD	Error of standard mean

Father's education level	1858	9.1	18.84	4.34	0.101
Mother's educational level	1858	9.04	20.08	4.48	0.104
Attention deficit	1858	8.48	59.38	7.71	0.179
Hyperactivity-impulsivity	1858	7.83	55.01	7.42	0.172
Oppositional Defiant Disorder	1858	4.57	28.26	5.32	0.123
academic aptitude	1858	28.56	65.07	8.07	0.188

Table 3: matrix of correlations between academic aptitude scores and education level of mothers' educational level, attention deficit, hyperactivity and impulsivity Conduct

	Mother's educational level	Father's education level	Attention deficit	Hyperactivity-impulsivity	Oppositional Defiant Disorder
Pearson correlation	0.352	0.343	-0.349	-0.129	-0.146
Significance level	0.001	0.001	0.001	0.001	0.001
number	1858	1858	1858	1858	1858

According to Table 3 can be explained the relationship between the variables of the study. There is positive and meaningful correlation coefficient as 0.352 and 0.343 respectively, between academic talent and Mother's educational level and Father's education level that is meaningful at P<0.001 level but there is negative and meaningful relationship between academic talent and attention deficit, Hyperactivity-impulsivity and Defiant Disorder that are -0.349, -0.129 and -0.146 respectively at P<0.001.

The main hypothesis of the study was evaluated by the multivariate regression method that its results suggested in 4 and 5 tables. According to the results of ANOVA in Table 4 can be argued that the model at P <0.001is significant.

Table 4: Regression analysis of academic talent and Father's education level, mothers' educational level, attention deficit, hyperactivity and impulsivity oppositional defiant disorder

	SS	df	MS	f	p	R	Square of R
regression	27569.106	5	5513.821	109.762	0.001	0.48	0.23
remained	92229.962	1836	50.234				
total	119799.068	1841					

Predictor variables: mother's education, father's education, attention deficit, hyperactivity and impulsivity oppositional defiant disorder

Variable criteria: academic talent

According to the results presented in Table 4 it can be concluded that the R-squared for the considered model is equal to 0.23, it means it is possible to predict %23 of academic talent variance by using f variables of mother's education, father's education, attention deficit, hyperactivity and impulsivity oppositional defiant disorder. In this equation, Oppositional Defiant Disorder isn't a significant contribution in predicting academic talent.

Table 5: regression coefficients for the variables of father's education level, mothers' educational level, attention deficit, hyperactivity and impulsivity Conduct

Not-standard coefficients		standard coefficients	t			P
Linear indexes						
	B	Standard error	β		tolerance	VIF

Constant coefficient	24.77	0.505		49.06	0.001		
Mother's educational level	0.345	0.047	0.191	7.281	0.001	0.609	1.642
Father's education level	0.345	0.049	0.158	5.979	0.001	0.604	1.656
Attention deficit	-0.385	0.030	-0.368	-13.047	0.001	0.526	1.900
Hyperactivity-impulsivity	0.147	0.037	0.135	3.995	0.001	0.366	2.735
Oppositional Defiant Disorder	0.22	0.050	0.015	0.452	0.652	0.392	2.548

As it can be seen from table 5 the four variables of Mother's education level (P<0.001) ، (0.191=β), Father's education level (P<0.001) ، (0.158= β), attention deficit (P<0.001) ، (0.368- = β), Hyperactivity-impulsivity (P<0.001) ، (0.135= β) have a great share in predicting academic talent. in this equation the variable of oppositional defiant disorder had no significant role in predicting academic talent.

Discussion and Conclusion

The results obtained from this study indicated that four variables of Mother's education level (0.191=β), Father's education level ،(0.158= β), attention deficit (0.368- = β), Hyperactivity-impulsivity (0.135= β) have a great effect in predicting academic talent. But oppositional defiant disorder had no significant role in predicting academic talent. According to the results, it can be concluded that two factor of the family (parents' education) and individual (attention deficit and hyperactivity) significant and important impact in children academic aptitude. However, other factors that have not been identified in this study are effective in academic talent that should be taken into consideration in the next studies. The results of this study are consistent with the results and comments from Biderman et al. (2004) and DePaul (2006). They have also explained that the academic achievement is one of the areas that the children, s deficit and hyperactivity areas of weakness that it is easily visible and definite and their academic performance is lower than their IQ (Biderman et al,2004). The children with this disorder are facing with issues such as the need for the private training school, fails, repeat the academic foundation and requires special training program. As well as the possibility of expelling them from school is more (Depaol,2006)

These comments are consistency with the personal factors that have been considered in this study but in relation to family, factors can be paid to the effects of this phenomenon. Genetic factors are important in the creation this disorder. The genes have more importance in creating the symptoms of attention deficit hyperactivity disorder and transfer them from a generation to the next generation (Barkley,1990 et al,1980). In another study, they also found that children whose parents were suffered from this disorder fifty-seven percent more at risk of this disorder (Hudziak et al,2005). All These evidence suggests that genetics plays an important role (of parents) plays in the development of these disorder. Here according to the level and the number of classes (low academic level) from the hyperactive children, it seems that when these children as a parent taking care of the children, they would have become lower educational level and with more probability they will be hyperactive and impulsivity children. The results of the present study are in line with the hypothesis of the genetic disorder. In the present study, attempts have done to determine the share of each of the variables. Unfortunately, there was not observed a research that previously had considered this issue in order their results compare or measured but in general results of these study support previous theories and research results both in the individual and in the family.

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