

# Association Between Parenting Styles and Symptoms of Attention Deficit Hyperactivity Disorder



Esra ÇÖP<sup>1</sup>, S. Ebru ÇENGEL KÜLTÜR<sup>2</sup>, Gülser ŞENSES DİNÇ<sup>3</sup>

## SUMMARY

**Objective:** We aimed to study the characteristics of child and mother reported parenting styles of children with Attention Deficit Hyperactivity Disorder (ADHD) and the association of parenting styles of mothers with demographic and clinical variables like ADHD symptoms, sex, age, ADHD subtype, and comorbidity.

**Method:** 58 children with ADHD and 30 healthy children were included in this study. All children were assessed with The Schedule for Affective Disorders and Schizophrenia for School Aged Children- Present and Lifetime Version. ADHD symptom severity was assessed with The Conners Parent Rating Scale and The Conners Teacher Rating Scale. The Parenting Style Inventory (PSI) and The Parental Attitude Research Instrument (PARI) were used to assess the parenting styles of mothers.

**Results:** The ADHD group had lower scores on two subscales of PSI (acceptance/involvement and strictness/supervision) as well as democratic attitude and equality subscale of PARI while it had higher scores on the strict discipline subscale of PARI when compared to the control group. In the ADHD group, higher symptoms of oppositional defiant disorder were associated with higher strict discipline scores of mothers and lower child reported acceptance/involvement scores of mothers.

**Conclusion:** Our findings supported the idea that there may be an association between parenting attitudes and ADHD symptoms in families having a child with ADHD. These results indicated the importance of an integrated approach to ADHD diagnosis and treatment as well as evaluating the child with ADHD in the context of family environment.

**Keywords:** attention deficit hyperactivity disorder, parenting, child

## INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a prevalent, chronic, developmental disorder of the childhood, which is characterized by attention deficit, hyperactivity, and impulsivity. A meta-analysis of 102 studies from a number of countries reported an ADHD prevalence of 5.29% under the age of 18 years (3% in adolescents and 6% in school age children) (Faraone et al. 2003).

Parent attitudes constitute an important part of treatment planning in ADHD, as they represent a field for which various

approaches have been developed. Studies involving families of children with ADHD have demonstrated a lesser degree of parental warmth and a higher degree of parental depression, anxiety, stress, as well as inconsistent and hostile parenting when compared to controls (Durukan et al. 2009, Cussen et al. 2012). These families were reported to have weak problem solving abilities and difficulties with role distribution (İmren et al. 2013). It was also shown that parents of hyperactive children exhibit more aggressive behavior (physical punishment practices and frequent loss of emotional control) and employ control methods that involve less rewarding (Woodward et al.

Received: 15.09.2014 - Accepted: 23.11.2015

<sup>1</sup>M.D., Yenimahalle Education and Research Hospital, Department of Child and Adolescent Psychiatry, Ankara, <sup>2</sup>Assoc. Prof., Hacettepe Üniversitesi Faculty of Medicine, Department of Child and Adolescent Psychiatry, Ankara, <sup>3</sup>M.D., Ankara Children's Hospital, Department of Child and Adolescent Psychiatry, Ankara, Turkey.

e-mail: esratas77@yahoo.com

doi: 10.5080/u11227

1998, Johnston and Mash 2001). Ertuğrul and Toros (2010) examined the correlation between perceived parenting attitudes in children with ADHD and marital harmony. They showed that mothers perceived as permissive, negligent, or authoritarian had a lesser degree of marital harmony.

A mutual interaction exists between parent attitudes and a child's character, with both having the potential to affect the other in both a positive and negative manner. Some parental characteristics (smoking, drinking alcohol, emotional stress during pregnancy, severe marital problems, and a parental history of ADHD) are considered to increase the risk for ADHD (Moriyama et al. 2012). On the other hand, it has been reported that the adoption of children with a brief attention span and hyperactivity, resulting from long-lived emotional deprivation, leads to some improvement of these symptoms (Şenol 2008). In the effort to determine the relationship between parenthood with conduct disorder and oppositional defiant behavior/ behavioral problems, it is not clear which properties of a child influence parenting functions (Johnston et al. 2002, Johnston and Jassy 2007). It has been shown through observational studies that parenting functions are correlated with behavioral problems in children with ADHD (Johnston and Jassy 2007). Thus, it is unclear whether ADHD or comorbid disruptive behavior disorders are more decisive on parent attitudes. A child with ADHD may experience various challenges in self-organizing functions due to difficulty focusing, impulsivity, and hyperactivity. Since ADHD also has some genetic components, parents of these children may also fail to fulfill their regulatory functions for child's self-organizing skills. A better understanding of this complex interplay may guide treatment planning. Therefore, investigation of parenting functions and associated clinical variables in families of children with ADHD has been considered an important subject and therefore studied.

There are a limited number of domestic studies on parent attitudes in children with ADHD (Durukan et al. 2009, Ertuğrul and Toros 2010). In the present study, unlike previous studies on this subject, we aimed to compare both perceived and maternally reported parenting functions as well as associated clinical variables, including level ADHD symptoms, sociodemographic properties, ADHD subtype, and comorbidities in ADHD.

## METHOD

### Study Sample

This study involved 58 children, 8-17 years old, who presented to Hacettepe University Faculty of Medicine Childhood and Adolescence Psychiatry clinic and were diagnosed with ADHD according to the DSM-IV diagnostic criteria. Thirty healthy children were enrolled in the control group. The inclusion criteria for the ADHD group were, (1) having

received no drug treatment until 1 month prior to the interview; (2) having no neurological and/or chronic disorder; (3) having no uncorrected visual or hearing disorder; and (4) having no mental retardation. The inclusion criteria for the control group included, (1) having no chronic medical condition or receiving no long-term medical treatment; (2) having sought for no medical help for a psychiatric complaint within the last year; and (3) having no mental retardation. The control group consisted of children meeting the inclusion criteria who were selected from either patients presenting to the outpatient clinics of the children's hospital or from the children of hospital staff. Children or adolescents with a history of premature birth or severe head trauma were also excluded. After obtaining ethics committee approval, all children and adolescents as well as their parents participating in the study were informed about the study and their consent was obtained.

### Tools

Schedule for Affective Disorders and Schizophrenia for School Aged Children - Present and Life time Version (K-SADS-PL): K-SADS-PL is a semi-structured interview form that was developed by Kaufman et al. in 1997 in order to detect past and present psychopathologies of children and adolescents according to the DSM-III and DSM-IV diagnostic criteria. Information provided by parents and children/adolescents are scored, first separately then combined, in conjunction with clinicians' observations. The diagnosis is based on both the information obtained from parents and children/adolescents as well as the summary scores. K-SADS-PL's validity and reliability study was performed by Gökler et al. in 2004.

Conners' Teacher Rating Scale (CTRS-28): Developed by Conners (1997) in order to rate the in-class behaviors of students. It is composed of 28 items. Furthermore, its validity and reliability study was shown in Turkish; and it has a Cronbach alpha internal consistency coefficient of .95 (Şener et al., 1995). CTRS is used to screen attention deficit and disruptive behavior disorder. It is completed by answering with a 4-grade Likert type scale. High scores indicate the intensity of symptoms specific to disruptive disorders.

Conners' Parent Rating Scale (CPRS-48): Is composed of 48 items (Conners, 1997). Its validity and reliability were shown in Turkish; and it has a Cronbach alpha internal consistency coefficient ranging between .67 and .92 for 4 subscales ("Defiant behavior", "Attention deficit", "Hyperactivity", and "Disrupted Behavior") (Dereboy et al., 1998). The questions in the 4-grade Likert type scale are answered by parents.

The Parenting Style Inventory (PSI): PSI was developed by Lamborn et al. (1991) from the responsiveness and demandingness dimensions that have been suggested by some researchers, and also from other scales related to parenting styles. The scale is completed by children above 10 years of

age and adolescents, and composed of three dimensions in the form of "Acceptance/care", "Control/supervision, and "Psychological autonomy". The "Acceptance/care" dimension is aimed to rate how affectionate, caring, and involved the children perceive their parents. The "Control/supervision" dimension is aimed to rate how controlling the children perceive their parents. The "psychological autonomy" dimension is aimed to rate at which level parents practice democratic attitude and reinforce the child's personality. The items in "Acceptance/care" and "Psychological autonomy" are rated using a 4-grade Likert type scale; the first two items in the "Control/supervision" dimension are rated with a 7-grade Likert type scale, and the remainders with a 3-grade Likert type scale. The validation and reliability study in Turkish was done by Yılmaz (2000). The reproducibility and reliability coefficients for each sub-dimension as well as the three groups have been reported to range between 0.67 and 0.93; furthermore, Cronbach alpha internal consistency coefficients range between 0.6 and 0.75.

The Parental Attitude Research Instrument (PARI): Developed by Shaffer and Bell (1958), this scale's validation and reliability in Turkish was tested by LeCompte et al. (1978), Küçük et al. (1990). It is completed by parents and aims to rate parents' childhood rearing attitudes. The scale's internal consistency is 0.91. Furthermore, it rates five separate dimensions in the form of "Overprotective mothership", "Democratic treatment and granting equality", "Rejecting of housewifery role", "Incompatibility", and "Rigid disciplining". It is a Likert type scale and rated 1-4 points. All items except for items 2, 29, and 44 are rated by the directly scored grade. Scores were summed separately for each factor dimension. As a result, 5 separate scores reflecting 5 distinct dimensions are calculated for each case instead of a single summed score. Increased scores for factors other than "Democratic treatment and granting equality" indicate negative parent attitudes. No total score, but rather factor scores are taken into consideration. The maximum possible score is 64 for the subscale of "Overprotectiveness"; 36 for "Democratic treatment and granting equality"; 52 for "Rejecting housewifery"; 24 for "Interparental conflict"; and 64 for "Oppression and rigid disciplining".

Hollingshead-Redlich Scale: In order to determine a family's socioeconomic-sociocultural level, the Hollingshead-Redlich scale (Andreasen, 1987) was used after being translated into Turkish from CASH (Comprehensive Assessment of Symptoms and History) (Kültür, 2002). This scale performs an overall rating based on parents' occupational and educational status and reflects the highest such level reached for a certain period. In this scale, five distinct socioeconomic-sociocultural levels are defined. "Family in a wealthy, educated societal layer" is coded "1"; "parents who had higher education, profession, or higher administrative positions" is coded "2"; parents who were "smaller business owners, government

officials or skilled laborers, high school graduates" is coded "3"; "parents who were semi-skilled laborers and had educational level below high school education" is coded "4"; and "parents who were semi-skilled laborer, uneducated, or primary school graduates" is coded "5". Familial socioeconomic-sociocultural level is determined on the basis of the highest level of the two levels. Families with higher education, profession, or higher administrative positions are defined as having a "high SEL"; those who are "smaller business owners, government officials, skilled laborer, or high school graduates" are defined as having an "intermediate SEL"; and those who are "semi-skilled laborers and have an educational level below high school education, or are uneducated or primary school graduates" are defined as having a "low SEL".

### Administration of the Tests

Children and families who agreed to participate in the study were separately interviewed in a clinical interview based on the DSM-IV. The Schedule for Affective Disorders and Schizophrenia for School Aged Children- Present and Life time Version (K-SADS-PL) was then administered. Sociodemographic and clinical variables, such as premorbid adjustment, school success, and past medical disorders were learned during the clinical interview using the Hollingshead-Redlich scale and a clinical interview form developed by the researchers. Children and mothers were placed so that they could not see each other, and they completed each scale separately before the clinical interview. To evaluate mother-child relationship, children and adolescents were asked to complete the Parenting Style Inventory, and their mothers were asked to complete the Family Life and Child Rearing Attitude Inventory. Four children below 10 years of age in the control group and 15 children below 10 years of age (8-10 years) in the ADHD group were included in the study in order to increase the small sample size. It was observed whether or not these children understood instructions while completing the scale; those considered to be unable to complete the scale were excluded from the analyses. In the ADHD group, the diagnosis was reinforced with the Conners rating scales completed by parents and form teachers, and symptom level was determined on the basis of point scores. Conners Teacher Rating Scale was given to families in the ADHD group to be completed by the teachers. During the interviews with the mothers, Wechsler intelligence scale for children was administered to children and adolescents in the ADHD group by a clinical psychologist in order to determine their intelligence level. The evaluation of each child lasted for about two and a half hours.

### Statistical Analysis

Study data were analyzed using Statistical Package for the Social Sciences software package v 15.0 (SPSS Inc., Chicago, IL). The normality tests of the dependent variables were

performed with the P-P plot and Kolmogorov-Smirnov test. Categorical variables were compared using the Chi-square test; numeric variables were compared with the t-test when parametric test assumptions were met; and the Mann Whitney-U test when parametric test assumptions were not met. ADHD and control groups were compared with respect to PSI and PARI subtests using one-sided ANOVA with maternal age, which was different between the two groups, being used as covariate. A multivariate analysis was performed to investigate the effect of variables that were considered to predict parent attitudes. In this analysis, no multicollinearity was detected between dependent variables. A retrospective regression analysis was performed for the dependent variable in order to form a model that best mathematically expressed that variable with a minimum number of variables. All tests were two-sided and a significance level of  $p < 0.05$  was used for all statistical tests.

## RESULTS

### Description of the Sample

The attention deficit hyperactivity group consisted of 58 subjects (13 females and 45 males) (min/max age=8/15 years), while the control group consisted of 30 subjects (12 females and 18 males) (min/max=8/15 years). The mean age was  $10.13 \pm 2.36$  years in the ADHD group and  $11.2 \pm 2.4$  years in the control group. All children were attending school, with the youngest child attending second grade and the oldest 10th grade. There was no significant difference found between the two groups with respect to age, sex, parental educational status, and socioeconomic level, whereas maternal age was significantly greater in the control group ( $t=3.61$ ,  $p=0.001$ ) (Table 1). The numbers of ADHD subtypes were, attention deficit dominant group ( $n=16$ ); hyperactivity/impulsivity dominant group ( $n=10$ ); and the composite type group ( $n=32$ ). An additional psychiatric disorder was detected in 41 (70.7%) of the subjects, of whom 18 had more than one additional diagnosis (Table 1). The most common comorbidities included anxiety disorder (30.9%), oppositional defiant disorder/conduct disorder (25.9%), tic disorder (10.3%), and enuresis nocturna (10.3%).

### Comparison of parent attitudes in subjects with versus without ADHD

Scores of two PSI sub-dimensions ("Reception/caring" and "Control/supervision") were significantly lower in the ADHD group when compared to the control group ( $t=3.91$ ,  $p=0.001$  and  $t=-2.45$ ,  $p=0.01$ , respectively). The ADHD group had a lower score from the "democratic treatment and granting equality" subscale of PARI and a significantly higher score from the "rigid disciplining" subscale ( $t=3.26$ ,  $p=0.002$  and  $t=-2.37$ ;  $p=0.02$ , respectively) (Table 2). The difference

**Table 1.** Characteristics of the study sample

|                                | ADHD              | Control          | Statistical Analysis |       |
|--------------------------------|-------------------|------------------|----------------------|-------|
|                                | N/mean<br>(%/±sd) | N/mean<br>(%/±s) |                      | p     |
| Female                         | 13 (22.4)         | 12 (40)          | $X^2=3.007$          | 0.133 |
| Male                           | 45 (77.6)         | 18 (60)          |                      |       |
| Age                            | $10.13 \pm 2.36$  | $11.2 \pm 2.4$   | $U=654$              | 0.06  |
| Paternal age                   | $40.46 \pm 6.14$  | $42.13 \pm 4.65$ | $t=1.42$             | 0.16  |
| Paternal education (years)     | $10.29 \pm 3.6$   | $10.33 \pm 3.4$  | $U=861.5$            | 0.94  |
| Maternal age                   | $36.5 \pm 5.69$   | $40.3 \pm 4.1$   | $t=3.61$             | 0.001 |
| Maternal education (years)     | $9.2 \pm 3.57$    | $7.8 \pm 3.55$   | $U=671$              | 0.07  |
| Family structure               |                   |                  | $X^2=1.87$           | 0.2   |
| Elementary                     | 48 (82.8)         | 28 (93.3)        |                      |       |
| Extended                       | 10 (17.2)         | 2 (6.7)          |                      |       |
| SEL                            |                   |                  | $X^2=0.15$           | 0.99  |
| High                           | 16 (27.6)         | 8 (26.7)         |                      |       |
| Intermediate                   | 21 (36.2)         | 10 (33.3)        |                      |       |
| Low                            | 21 (36.2)         | 12 (40)          |                      |       |
| ADHD subtype                   |                   |                  |                      |       |
| AD                             | 16 (27.6)         | -                |                      |       |
| HA/I                           | 10 (17.2)         |                  |                      |       |
| Composite                      | 32 (55.2)         |                  |                      |       |
| Additional diagnosis           |                   |                  |                      |       |
| Yes                            | 41 (70.7)         | -                |                      |       |
| No                             | 17 (29.3)         |                  |                      |       |
| Number of additional diagnoses |                   |                  |                      |       |
| 1                              | 23 (40.7)         | -                |                      |       |
| >1                             | 18 (31)           |                  |                      |       |

ADHD: attention deficit hyperactivity disorder; SEL: socioeconomic level; AD: attention deficit; HA/I: hyperactivity /impulsivity

**Table 2.** Comparison of PSI and PARI sub-dimension scores in ADHD and control groups

|                                                 | ADHD           | Control        | Statistical Analysis |       |
|-------------------------------------------------|----------------|----------------|----------------------|-------|
|                                                 | mean(±sd)      | mean(±sd)      | t                    | p     |
| PARI overprotectiveness                         | $41.7 \pm 9.9$ | $39.3 \pm 8.6$ | -1.12                | 0.27  |
| PARI democratic treatment and granting equality | $26.9 \pm 2.9$ | $29.1 \pm 2.9$ | 3.26                 | 0.002 |
| PARI rejecting housewifery                      | $25.5 \pm 5.9$ | $25.2 \pm 5.4$ | -0.24                | 0.81  |
| PARI incompatibility                            | $14.7 \pm 4.4$ | $13.1 \pm 4.2$ | -1.73                | 0.09  |
| PARI rigid disciplining                         | $34.8 \pm 9.2$ | $30 \pm 8.3$   | -2.37                | 0.02  |
| PSI acceptance caring                           | $27.2 \pm 4.9$ | $31.1 \pm 2.9$ | 3.91                 | 0.001 |
| PSI autonomy                                    | $23.2 \pm 5.1$ | $22.6 \pm 4.9$ | -0.55                | 0.58  |
| PSI supervision                                 | $27 \pm 3.6$   | $29.3 \pm 2.7$ | -2.45                | 0.01  |

ADHD: attention deficit hyperactivity disorder; PSI: parenting style inventory; PARI: Parental attitude research instrument

**Table 3.** The relationship between ADHD symptoms severity, ADHD-related factors, demographic properties, and parenting functions in children with ADHD

|                         | PSI acceptance caring |                |         | PSI autonomy   |         |                | PSI supervision |                |         | PARI overprotectiveness |         |                | PARI democratic treatment and granting equality |                |         | PARI rejecting housewifery |   |        | PARI incompatibility |        |   | PARI rigid disciplining |   |        |
|-------------------------|-----------------------|----------------|---------|----------------|---------|----------------|-----------------|----------------|---------|-------------------------|---------|----------------|-------------------------------------------------|----------------|---------|----------------------------|---|--------|----------------------|--------|---|-------------------------|---|--------|
|                         | B                     | CI 95%         | B       | CI 95%         | B       | CI 95%         | B               | CI 95%         | B       | CI 95%                  | B       | CI 95%         | B                                               | CI 95%         | B       | CI 95%                     | B | CI 95% | B                    | CI 95% | B | CI 95%                  | B | CI 95% |
| Age                     | -0.735b               | -1.030, -0.44  | 0.086   | -0.229, 0.402  | -0.009  | -0.311, 0.293  | -0.934c         | -1.731, -0.136 | -0.245c | -0.456, -0.034          | -0.363  | -0.782, 0.056  | 0.100                                           | -0.189, 0.388  | 0.584   | -0.147, 1.316              |   |        |                      |        |   |                         |   |        |
| Sex                     | 1.479                 | -0.125, 3.083  | -2.235a | -3.952, -0.519 | -7.323b | -8.826, -5.821 | 5.066c          | 1.132, 9.001   | 0.966   | -0.074, 2.005           | 0.52    | -1.54, 2.58    | 1.000                                           | -0.424, 2.424  | 3.888c  | 0.276, 7.499               |   |        |                      |        |   |                         |   |        |
| Comorbidity             | -0.963                | -2.391, 0.465  | 1.722c  | 0.193, 3.250   | 1.237   | -0.023, 2.497  | -2.900          | -6.824, 1.025  | -1.860b | -2.897, -0.823          | 4.663b  | 2.602, 6.725   | 2.036a                                          | 0.616, 3.456   | -2.500  | -6.101, 1.102              |   |        |                      |        |   |                         |   |        |
| ADHD subtype            | 1.594                 | -0.430, 3.619  | 4.248b  | 2.081, 6.415   | 0.008   | -1.982, 1.997  | 3.003           | -1.712, 7.717  | 0.315   | -0.931, 1.560           | -1.969  | -4.446, 0.507  | 0.113                                           | -1.593, 1.819  | -3.364  | -7.691, 0.962              |   |        |                      |        |   |                         |   |        |
| CPRS attention deficit  | 0.272                 | -0.039, 0.583  | 0.418a  | 0.085, 0.751   | 0.109   | -0.214, 0.432  | 0.266           | -0.484, 1.016  | 0.626b  | 0.427, 0.824            | -0.433c | -0.827, -0.039 | -0.352a                                         | -0.624, -0.081 | -1.052a | -1.741, -0.364             |   |        |                      |        |   |                         |   |        |
| CPRS hyperactivity      | -0.190                | -0.448, 0.068  | -0.079  | -0.355, 0.196  | -0.431b | -0.667, -0.195 | -0.791c         | -1.458, -0.123 | -0.294b | -0.470, -0.117          | -0.384c | -0.735, -0.034 | -0.008                                          | -0.250, 0.234  | -0.422  | -1.034, 0.191              |   |        |                      |        |   |                         |   |        |
| CPRS defiant behavior   | -0.958b               | -1.401, -0.515 | -1.540b | -2.014, -1.066 | 0.279   | -0.215, 0.772  | -0.811          | -1.962, 0.341  | -0.362c | -0.667, -0.058          | -0.060  | -0.665, 0.545  | -0.057                                          | -0.474, 0.359  | 1.195c  | 0.139, 2.252               |   |        |                      |        |   |                         |   |        |
| CPRS disrupted behavior | 0.316b                | 0.139, 0.493   | 0.382b  | 0.193, 0.571   | 0.006   | -0.195, 0.207  | 0.736b          | 0.287, 1.186   | 0.206b  | 0.087, 0.325            | 0.329a  | 0.093, 0.566   | 0.204a                                          | 0.041, 0.366   | -0.043  | -0.456, 0.369              |   |        |                      |        |   |                         |   |        |
| CTRS attention deficit  | -0.047                | -0.158, 0.065  | -0.008  | -0.127, 0.112  | 0.142a  | 0.034, 0.250   | -0.120          | -0.396, 0.155  | -0.053  | -0.126, 0.019           | -0.082  | -0.227, 0.062  | -0.141a                                         | -0.241, -0.041 | -0.329a | -0.582, -0.077             |   |        |                      |        |   |                         |   |        |
| CTRS hyperactivity      | -0.252b               | -0.404, -0.099 | -0.100  | -0.263, 0.063  | -0.271b | -0.422, -0.119 | -0.060          | -0.431, 0.311  | -0.063  | -0.161, 0.035           | 0.035   | -0.160, 0.230  | 0.362b                                          | 0.228, 0.497   | 0.502a  | 0.162, 0.843               |   |        |                      |        |   |                         |   |        |

ADHD: attention deficit hyperactivity disorder; PSI: Parent style inventory; PARI: The Parental Attitude Research Instrument; CPRS: Conners' Parent rating scale; CTRS: Conners' Teacher Rating scale; CI: confidence interval; B: regression coefficient.

a:  $p < 0.01$ ; b:  $p < 0.001$ ; c:  $p < 0.05$

found for the above variables remained significant after controlling for maternal age.

### **Correlation between children properties, ADHD symptoms, and parent attitudes**

The analysis of the correlation between parent attitudes and various variables in ADHD and control groups revealed that age, increased defiant behavior, and teacher-reported hyperactivity symptoms as well as decreased conduct disorder symptoms were associated with reduced a PSI "Reception/caring" score ( $F=10.2$ ,  $p<0.001$ ,  $R^2=0.23$ ). Female gender, increased teacher-reported attention deficit symptoms were associated with an increased "Control/supervision" score ( $F=24.4$ ,  $p<0.001$ ,  $R^2=0.59$ ) of PSI. Furthermore, increased hyperactivity caused a reduction in the PSI "Control/supervision" score. Male gender, reduced attention deficit severity, and high defiant and teacher-reported hyperactivity scores were correlated with the "rigid disciplining" score ( $F=4.13$ ,  $p=0.001$ ,  $R^2=0.12$ ) of PARI. Having an additional diagnosis, higher age, and higher parent-reported defiant behavior and hyperactivity scores were correlated with reduced "Democratic behavior and granting equality" scores ( $F=6.97$ ,  $p<0.001$ ,  $R^2=0.26$ ) of PARI. Increased conduct disorder symptoms and maternally reported attention deficit symptoms were correlated with the "democratic behavior and granting equality" score ( $F=6.97$ ,  $p<0.001$ ,  $R^2=0.26$ ) of PARI (Table 3). In addition, a significant negative correlation was found between the total intelligence score and "Control/supervision" score ( $r=-0.45$ ,  $p<0.001$ ) of PSI as well as the "rigid disciplining" score ( $r=-0.17$ ,  $p=0.03$ ) of PARI. The regression analysis results of the parent attitudes, which were similar among the two groups, are presented in Table 3.

## **DISCUSSION**

The main finding of this study is that while children with ADHD perceive their parents as less repudiative and supervisory, mothers reported a more disciplinary and less democratic attitude. The self-reporting of mothers in having a more disciplinary and a more negative attitude toward democratic behavior as well as granting equality supports the idea that appropriate disciplinary approaches could not be developed. Although a number of studies failed to show any correlation between parenting functions and ADHD symptoms (Burke et al. 2008), Ellis and Nigg (2009) demonstrated a correlation between ADHD symptoms and inconsistent maternal authority.

A detailed analysis of the distribution of symptoms in the ADHD group showed that most notably children with ADHD, who predominantly showed hyperactivity symptoms, perceived their parents to be less caring, less affectionate, more repudiative, and less supervisory; while mothers

reported themselves to be imposing a more rigid disciplining and offering a less democratic attitude and equality to such children. Nevertheless, when attention deficit symptoms were predominant, children perceived their parents as more supervisory while mothers proportionally described themselves as having a more democratic attitude, being more equalitarian, and imposing less rigid disciplining. These results suggest that differences in ADHD symptoms may induce parallel alterations in parenting functions. They also suggest that when attention deficit was predominant, mothers preferred to demonstrate supervisory attitudes in order to correct it. Similarly, parents assuming a democratic and equalitarian attitude toward this group of children also suggest that autonomy development, which may be an important factor for the development of children's attention skills, is reinforced by parent attitudes. Similar to our study, Gau and Chang (2013) demonstrated that maternal control scores were higher for children with symptoms of attention deficit. A study from our country found a significant correlation between expressed anger level, cognitive problems-inattention, and level of social problems (Durukan et al. 2009). However, that study excluded mothers diagnosed with axis 1.

Our study demonstrated that as hyperactivity and oppositional symptoms were predominant, mothers attempted to deal with their children's behaviors with more oppressive disciplinary measures, while the children tended to perceive their parents to be less loving and indifferent. Literature data similarly suggest that children having the composite ADHD subtype perceive their parents as rather permissive and negligent, whereas children with hyperactive subtype perceive them as more authoritarian (Ertuğrul and Toros 2010).

With oppressive parent attitudes, children perceive their parents as repudiative; which may give rise to certain consequences that harm mutual trust between parents and children, and thus negatively affect treatment and disease course. Studies on parent attitudes have indicated that warm and receptive parenting has a favorable impact on children's development, whereas many studies have indicated the unfavorable impact of hostile and repudiative parent attitudes (Yılmaz 1999). Studies have also shown that there is a strong correlation between perceived parental rejective behavior and a child's sense of hostility. Furthermore, this variable is correlated to attention disorders, criminal tendency, and aggressive behavior (Meesters et al. 1995, Barnow et al. 2002). Moreover, İmren et al. (2013) displayed that children with ADHD and accompanying oppositional defiant disorder or conduct disorder had impairment in all familial functions. Assessments of perceived parenting attitudes revealed that a low level of parental emotional warmth, a high level of rejective behavior, and overprotectiveness were the basic determinants of expressionist behavior (Buschgens et al. 2010). From the viewpoint of negative parenting (rigid disciplining) and children's parental

perception as indifferent and over-controlling, it may be an important finding that oppositional behavior was correlated to all of these factors. Oppositional defiant disorder accompanies ADHD in as much as 30-50% of patients (Şenol, 2008), and although its etiology has not yet been elucidated, parenting functions have been emphasized as an associated factor.

We discovered a positive correlation between male gender and practicing rigid disciplining as a negative parenting function. However, when viewed in terms of related variables, the inability to practice discipline in an effective manner may be more decisive with regard to problematic behavior in male children with a marked oppositional behavior component, although the correlations remained weakly significant. When viewed from the standpoint of the most significant statistical correlation, a positive correlation was found between perceived controlling and female gender, additional diagnosis, and teacher-reported attention deficit symptoms; there was an opposite correlation found between perceived controlling and hyperactivity symptoms. These results also suggested that empathy can be established more easily with attention deficit symptoms than hyperactivity and oppositional symptoms. Furthermore, the effort in being supportive of children's functionality is more important. Although educational efforts to render parenting functions more effective have limited action on the main symptoms of ADHD, it has a beneficial role on accompanying conditions. A multimodal ADHD treatment study displayed that behavioral parenting approaches produced improvements in oppositional behaviors as well as the relationship between parents and children (The MTA Cooperative Group 1999).

Weak, albeit significant, correlations found in our study's ADHD and control groups suggest that parental attitudes may be correlated to accompanying symptoms rather than main ADHD symptoms.

The main limitations of our study are its cross-sectional design and failure to establish a causal relationship. However, it has some other limitations, including conducting the study in a clinical sample, evaluating parent attitudes solely on the basis of mothers' reports, and not evaluating parental properties (maternal ADHD symptoms or psychopathology) which could be correlated to parent attitudes. Nevertheless, our study also has strong aspects, including the use of certain rating tools with previous validity and reliability studies and forming the ADHD group with untreated patients. The results of this study suggested that it would be important to account for the subtypes of ADHD for future studies that will investigate parent attitudes and effective disciplinary practices in children with ADHD. Investigation of the reasons of different attention deficit and hyperactivity disorder symptoms as well as maternally reported and children-perceived parent attitudes will make an important contribution towards efforts aimed at the diagnosis and treatment of ADHD.

## REFERENCES

- Barnow S, Schuckit M, Smith TL et al (2002) The relationship between the family density of alcoholism and externalizing symptoms among 146 children. *Alcohol Alcohol* 37:383-7.
- Burke JD, Pardini DA, Loeber R (2008) Reciprocal relationships between parenting behavior and disruptive psychopathology from childhood through adolescence. *J Abnorm Child Psychol* 36:679-92.
- Buschgens CJM, vanAken MAG, Swinkels SHN et al (2010) Externalizing behaviors in preadolescents: familial risk to externalizing behaviors and perceived parenting styles. *Eur Child Adolesc Psychiatry* 19:567-75.
- Conners CK (1997) *Conners' Rating Scales- Revised*. North Tonawada NY: Multi-Health Systems Publishing.
- Cussen A, Sciberras E, Ukoumunne OC et al (2012) Relationship between symptoms of attention-deficit/hyperactivity disorder and family functioning: a community-based study. *Eur J Pediatr* 171:271-80.
- Dereboy C, Senol S, Sener S (1998) Adaptation of Conners' parent rating scale in Turkish. *Proceedings 10th National Congress of Psychology, Ankara, Turkey*.
- Durukan I, Erdem M, Türkbay et al (2009) Dikkat eksikliği hiperaktivite bozukluğu olan çocukların klinik belirtilerinin annelerinin öfke düzeyleri ve öfke ifade tarzları ile ilişkisi. *Gülhane Tıp Dergisi* 51:101-8.
- Ellis B, Nigg J (2009) Parenting practices and attention-deficit/hyperactivity disorder: New findings suggest partial specificity of effects. *J Am Acad Child Adolesc Psychiatry* 48:146-54.
- Ertuğrul G, Toros F (2010) Dikkat eksikliği hiperaktivite bozukluğu olan ergenlerin algıladıkları ebeveyn tutumu ve ebeveynlerinin evlilik uyumları arasındaki ilişki. *New/Yeni Symposium Journal* 48:172-83.
- Faraone SV, Sergeant J, Gillberg C et al (2003) The worldwide prevalence of ADHD: is it an American condition? *World Psychiatry* 2:104-13.
- Gau SS, Chang JP (2013) Maternal parenting styles and mother-child relationship among adolescents with and without persistent attention-deficit/hyperactivity disorder. *Res Dev Disabil* 34:1581-94.
- Gökler B, Ünal F, Pehlivan Türk B et al (2004) Okul çağı çocukları için duygulanım bozuklukları ve şizofreni görüşme çizelgesi - şimdi ve yaşam boyu versiyonu - Türkçe versiyonu'nun (ÇDŞG-ŞY-T) geçerlilik ve güvenilirliği. *Çocuk ve Gençlik Ruh Sağlığı Dergisi* 11:109-16.
- İmren SG, Arman AR, Gümüştaş F et al (2013) Karşıt olma karşıt gelme bozukluğu ve/veya davranım bozukluğu eşastalanımı olan ve olmayan DEHB tanılı çocuk ve ergenlerde aile işlevselliğinin değerlendirilmesi. *Çukurova Üniversitesi Tıp Fakültesi Dergisi* 38:22-30.
- Johnston C, Mash EJ (2001) Families of children with attention deficit hyperactivity disorder: review and recommendations for future research. *Clin Child Fam Psychol Rev* 4:183-207.
- Johnston C, Murray C, Hinshaw SP et al (2002) Responsiveness in interactions of mothers and sons with ADHD: Relations to maternal and child characteristics. *J Abnorm Child Psychol* 30:77-88.
- Johnston C, Jassy JS (2007) Attention-Deficit/Hyperactivity Disorder and oppositional/Conduct Problems: Links to Parent-Child Interactions. *Can Acad Child Adolesc Psychiatry* 16:74-9.
- Kaufman J, Birmaher B, Brent D et al (1997) Schedule for affective disorders and schizophrenia for school-age children-present and life time version (K-SADS-PL): initial reliability and validity data. *J Am Acad Child Adolesc Psychiatry* 36:980-8.
- Küçük S (1990) PARI ölçeğinin Türkçe formunun 2., 3., ve 4. alt ölçeklerinin geçerlilik çalışması. V. Ulusal Psikoloji Kongresi. *Psikoloji Seminer Dergisi Özel Sayısı* 8:451-60.
- Lamborn SD, Mounts NS, Steinberg L et al (1991) Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent and neglectful families. *Child Dev* 62:1049-65.
- Le Compte G, Le Compte A, Özer SA (1978) Üç sosyo-ekonomik düzeyde Ankaralı annelerin çocuk yetiştirme tutumları: Bir ölçek uyarlaması. *Psikoloji Dergisi* 1:5-8.
- Meesters C, Muris P, Esselink T (1995) Hostility and perceived parental rearing behavior. *Pers Divid Differ* 18:567-70.

- Moriyama TS, Cho AJM, Verin RE ve ark. (2012) Attention deficit hyperactivity disorder. IACAPAP Textbook of Child and Adolescent Mental Health, JM Rey (Ed), Geneva, s1-23.
- Şener Ç, Dereboy Ç, Dereboy IF et al (1995) Conners öğretmen derecelendirme ölçeği Türkçe uyarlaması-I. Çocuk ve Gençlik Ruh Sağlığı Dergisi 2:131-41.
- Şenol S (2008) Dikkat Eksikliği Hiperaktivite Bozukluğu. Çocuk ve Ergen Psikiyatrisi Temel Kitabı, F Çetin Çuhadaroğlu (Ed), Ankara. Çocuk ve Gençlik Ruh Sağlığı Derneği Yayınları, p. 293-311.
- The MTA Cooperative Group (1999) A 14-month randomized clinical trial of treatment strategies for attention deficit/hyperactivity disorder. Arch Gen Psychiatry 56:1073-86.
- Yılmaz A (1999) Çocuk yetiştirme tutumları: Kuramsal yaklaşımlar ve görgül çalışmalar. Türk Psikoloji Yazıları 1:99-118.
- Yılmaz A (2000) Anne Baba Tutum Ölçeği'nin Güvenirlilik ve Geçerlik Çalışması. Çocuk ve Gençlik Ruh Sağlığı Dergisi 7:160-72.
- Woodward L, Taylor E, Dowdney L (1998) The parenting and family functioning of children with hyperactivity. J Child Psychol Psychiatry 39:161-9.