

Paper 3

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Development and Aging

Childhood disruptive behaviors and family functioning in clinically referred children: Are girls different from boys?

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Baseline assessments of 4 to 8-year-old children, 26 girls and 101 boys, referred to outpatient treatment for disruptive behaviors, were examined, focusing on possible differences between the functioning of boys and girls and their families. Child variables included diagnostic information, measures of disruptive behaviors, social competence, and independent observations of child behaviors. A variety of family variables, such as information regarding parenting practices, parental stress, and depression were included. Teacher reports of disruptive behaviors and social competence at school were included. Teacher ratings of child functioning indicated that boys displayed significantly more externalizing behaviors and they were less socially competent than girls. Parents perceived both girls and boys as highly oppositional and aggressive, and generally speaking, differences were few. Nevertheless, the level of stress was higher in girls' than in boys' families, and mothers of girls reported of higher levels of depressive symptoms. Girls and boys did not differ regarding diagnostic status.

Key words: ODD, young children, sex differences.

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INTRODUCTION

A recent review shows that oppositional defiant and conduct problems are common in young children (Costello, Egger & Angold, 2005), and conduct problems are a major cause of referral of children and adolescents to outpatient treatment in child and adolescent psychiatric clinics in Norway (Anderson, Halsteinli, Kalseth, Pedersen & Waagan, 2002). Both Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD) are classified as disruptive behavior disorders. According to the diagnostic criteria of the American Psychiatric Association (APA) in the *Diagnostic and Statistical Manual of Mental Disorders* 4th edition (DSM-IV-TR) one criterion is that these behaviors cause impairment in one or several domains of the child's everyday functioning (APA, 2000). The essential features of ODD are a recurrent pattern of negativistic, defiant, disobedient, and hostile behavior toward authority figures. CD is characterized by a repetitive and persistent pattern of behavior, in which the basic rights of others are violated, with transgression of age-appropriate societal norms or rules. Early onset CD is more common in boys than in girls, as has been verified by several studies of prevalence of ODD and CD (Maughan, Rowe, Messer, Goodman & Meltzer, 2004). Early development of disruptive behavior disorders seems to be associated with a trajectory leading to further antisocial development (Lavigne, Cicchetti, Gibbons, Binns, Larsen & DeVito, 2001; Moffitt, Caspi, Harrington & Milne, 2002), which is probably the case for non-aggressive conduct

symptoms as well (Simonoff, Elander, Holmshaw, Pickles, Murray & Rutter, 2004).

Early development of ODD and CD are affected by several factors. These include child factors (e.g. difficult temperament, high rates of disruptive, impulsive, inattentive, and aggressive behaviors) and family factors (e.g. parenting, parental psychopathology, marital adjustment, maternal age). Most research on aggressive behaviors has focused on boys (Keenan, Loeber & Green, 1999; Moffitt, Caspi, Rutter & Silva, 2001) and too little is known about externalizing behaviors in girls (Hinshaw, 2002). A lack of interest in sex differences could be due to an assumption that early development of ODD and CD is not influenced by sex (Webster-Stratton, 1996), an assumption that may not be warranted. Better knowledge of the factors considered important in developing disruptive behaviors in young children, including possible sex differences, might improve our understanding of the etiology of conduct problems.

Children referred for disruptive behaviors are at increased risk of co-occurring psychiatric disorders (Maughan *et al.*, 2004). Ninety percent of persons with a life-long disruptive disorder have at least one co-morbid disorder (Moffitt *et al.*, 2001). It is obviously important to explore whether or not diagnostic status in young children with oppositional and aggressive traits differs due to the child's sex. In epidemiological studies, the comorbidity of disruptive behavior disorders and other psychiatric disorders varies, but the overlap between ODD/CD and Attention Deficit Hyperactivity Disorder

(ADHD) is generally marked (Angold, Costello & Erkanli, 1999), and ADHD is probably a risk factor for developing CD in boys (Loeber, Green, Keenan & Lahey, 1995). ADHD varies in prevalence in girls and boys. There is no consistently reported prevalence ratio between girls and boys. In clinically referred samples, the female-male ratio ranges from 1:4 to 1:9 (APA, 2000). Girls with ADHD and ADHD predominantly inattentive type show higher rates of aggressive behaviors than normal controls (Zalecki & Hinshaw, 2004). Keenan *et al.* (1999) hypothesized that impulsivity could be important in the relationship between CD and ADHD, rendering the girls with ADHD with symptoms of impulsivity at increased risk of developing CD. Aspects of both CD and ADHD may characterize the behavior of the most disturbed children with the poorest prognoses. Children who suffer from comorbid CD and ADHD are at heightened risk of persistent antisocial development, compared to children suffering from either disorder by itself (Simonoff *et al.*, 2004). Disruptive behavior disorders are often co-morbid with anxiety (Angold *et al.*, 1999). It has been argued that the presence of anxiety has a moderating effect on the severity of disruptive behaviors (Russo & Beidel, 1994). However, it has been suggested that children with co-occurring CD and anxiety represent the most severely disturbed sub-group of disruptive children (Zoccolillo, 1992). Few studies so far have concerned children diagnosed with disruptive behavior disorders below the age of nine (Lumley, McNeil, Herschell & Bahl, 2002), making knowledge of possible sex differences in diagnostic patterns in young, disruptive children of interest.

Parenting is an important factor in the development of ODD and CD (Patterson, Reid & Dishion, 1992). Several aspects of child rearing, such as poor supervision, lack of parental warmth, and harsh styles of discipline are correlated with disruptive behavior in children (Kazdin, 1996; Stormshak, Bierman, McMahon & Lengua, 2000). Both girls and boys who experience high levels of coercion at home show high levels of aggression among their peers and at school (McFadyen-Ketchum, Bates, Dodge & Pettit, 1996). However, research on maladaptive and ineffective parenting practices linked with antisocial patterns in children has generally concentrated on boys, and little is known about how girls are affected by these parenting styles (Zahn-Waxler, 1993). Parents do interact with boys and girls differently, especially with regard to conduct problems, and parenting may influence the development of CD in girls and boys in different ways (Keenan *et al.*, 1999). Other family variables such as the level of parental education, single parenthood, (Sourander, 2001), maternal depression (Marmorstein, Malone & Iacono, 2004; Webster-Stratton, 1996), maternal age (Lahey, Miller, Gordon & Riley, 1999), and marital discord (Grych, Jouriles, Swank, McDonald & Norwood, 2000; Jouriles, Murphy, Farris, Smith, Richters & Waters, 1991; Ware, Jouriles, Spiller, McDonald, Swank & Norwood, 2001) are all associated with higher levels of problem behaviors in children. Many of these circumstances can result in a higher

level of parental stress. ODD and severe disruptive behaviors are significantly associated with parental stress (Eyberg, Boggs & Rodriguez, 1992; Kashdan, Jacob, Pelham *et al.*, 2004).

Approximately 50–60% of children who display conduct problems at home also exhibit clinically significant behavior problems in day-care centers and at school (Ramsey, Patterson & Walker, 1990). These children are also at higher risk of developing serious problems later than children who are aggressive in only one setting (CPPRG, 2002; Moffitt, 1993). These problems mostly manifest themselves in repeated conflicts with peers, teachers or other school staff (House, 1999). For this reason, information about how disruptive children function in kindergarten and school is highly relevant, making knowledge of differences and similarities between girls' and boys' functioning in kindergarten and at school of significance.

Aim of the study

The participants were young children who had been referred to outpatient treatment for disruptive and aggressive behaviors as experienced by their parents, in two cities in Norway, and their parents. The aim of the study was to determine whether girls and boys differ in the following domains: (1) Are boys more susceptible than girls to co-morbid diagnostic conditions, when we apply DSM-IV standards for young children? (2) Do parents and teachers perceive girls and boys as equally oppositional and aggressive, and are girls and boys perceived to be similar in their social functioning? (3) Do parenting practices, i.e. the application of positive parenting and negative parenting, differ according to the child's sex? (4) Do aspects of family functioning, that is parental stress, parental depression, and parental aggression, differ in the families of disruptive girls and boys?

METHOD

Participants

Child characteristics were: (a) the child was 4–8 years old; (b) the primary referral reason was child misconduct (e.g. non-compliance, aggression and/or oppositional behaviors); (c) the child had no debilitating physical impairment; (d) the child's behavior was within the clinical range and above the 90th percentile on the Eyberg Child Behavior Inventory (ECBI) using Norwegian norms (Reedt & Bertelsen, 2001); and (e) the child had ODD or CD according to standards in the DSM-IV-TR (APA, 2000), or a sub-clinical diagnosis of ODD/CD. The term "sub-clinical diagnosis" refers to those children who scored one criterion less than those four required for a formal DSM-IV ODD diagnosis or the three items required for a formal DSM-IV CD diagnosis, and who had diminished function, a procedure suggested by Angold & Castello (1996).

The study included 127 children and their families; 26 girls and 101 boys. The mean age of the girls was 6.60 years and the mean age of the boys was 6.62 years. The number of children living in single-parent families was 36; 91 children were living in two-parent families. A total of seven children were in foster care. Two of the foster parents were biologically related to the children. All participants but two were native Norwegians.

Procedures

Children 4–8 years old who had been referred for disruptive behavior to two child and adolescent outpatient clinics in Norway from August 2001 until June 2003 were considered for participation. Informed consent was solicited and obtained from the families on the basis of written and verbal information about the research program. Only two families that met the inclusion criteria refused to participate in the project. A semi-structured interview with parents as informants, concerning current episodes of psychopathology in their children, was conducted.

Measures

Diagnostic considerations. Kiddie-SADS is a semi-structured diagnostic interview designed to assess episodes of psychopathology in children and adolescents using DSM-IV criteria (Kaufman, Birmaher, Brent *et al.*, 1997). Only the diagnoses that were most relevant for 4- to 8-year-olds were included. Three trained interviewers conducted the interviews. The interviews were recorded and random reviews of 10% of the interviews showed high reliability, with inter-rater agreements above 0.90.

Behavior problems. The Eyberg Child Behavior Inventory (ECBI) is a 36-item behavioral inventory of child conduct-problem behavior for children aged 2–16. It consists of two scales (Robinson, Eyberg & Ross, 1980). On the intensity scale the parent is required to respond on a seven-point Likert scale from 1 = never, until 7 = always, total scores thus ranging from 36 to 252. On the problem score, a dichotomous yes or no scale ranging from 0 to 36, parents are asked to indicate whether or not their child's behavior is a problem. The intensity scale is an indicator of the strength of the problem behaviors. The Cronbach alpha (α) on mother reports on the intensity scale was high, $\alpha = 0.84$. On the problem scale the parents indicate whether they perceive each behavior as difficult to deal with. The social competence scale-parent (PCOMP) was developed by the Conduct Problem Prevention Research Group (Webster-Stratton & Hammond, 1998) and consists of 12 items rated on a 1–5 scale that addresses parents' perception of their child's social competence. The internal consistency was high, with $\alpha = 0.84$.

Teacher ratings. Social Competence and Behavior Evaluation for Teachers (SCBE-T) was used to assess child behaviors in kindergarten and at school. The SCBE-T is an 80-item, six-point Likert scale that measures social competence and emotional and behavioral problems (LaFreniere & Dumas, 1995). In this study two subscales were of interest. One scale measured behavioral problems and consisted of 10 items, with mean scores from 0–5 and lower scores indicating more aggressive behaviors; the internal consistency was $\alpha = 0.74$. The other scale of interest measured social competence, and consisted of 40 items with mean scores between 1 and 6 and higher scores indicating a higher level of social competence; here, the internal consistency was $\alpha = 0.90$.

Parental stress, symptoms of parental depression, and parental levels of aggression. Parents completed the Parent Stress Index (PSI), which comprised 101 items that measured parents' perceived stress (Abidin, 1995). Parents rate each item on a five-point Likert scale. On the PSI child domain measuring stress related to child behaviours, which consisted of 57 items with scores ranging from 47 to 235, the internal consistency was $\alpha = 0.88$. On the parental domain, which measured perceived stress due to functioning in parenting and which consisted of 54 items with total scores ranging from 54 to 270, the internal consistency was $\alpha = 0.92$. Parents completed the Beck Depression Inventory (BDI) which is a widely used measure

of depression (Beck, Steer & Garbin, 1988), as an indicator of parental depressive symptoms. Parents responded on an intensity scale ranging from 0 to 3 concerning 21 attitudes and symptoms. Total scores ranged from 0 to 63 and the internal consistency was $\alpha = 0.89$. The Brief Anger-Aggression Questionnaire (BAAQ) was used to measure parental levels of anger and aggression. The BAAQ consists of six items covering acts and feelings of anger as reported on a five-point scale, with total scores ranging from 6 to 30 (Maiuro, Vitaliano & Cahn, 1987). The internal consistency of BAAQ in this study was $\alpha = 0.61$. The Parenting Practices Interview (PPI) was adapted from the Oregon Social Learning Center Discipline Questionnaire (Webster-Stratton, Reid & Hammond, 2001). Three subscales were used, including harsh, inconsistent and positive parenting. Parents report the probability and the frequency in which they used harsh discipline techniques; there are 14 items on a seven-point scale with an $\alpha = 0.80$, inconsistent discipline, consisting of eight items on a seven-point scale with an $\alpha = 0.69$ and positive parenting consisting of 15 items on a seven-point scale and $\alpha = 0.65$. Mean values of the scales ranging from 1 to 7 on PPI was applied.

Independent observations of parenting and child behaviors. Parenting practices and child behavior were observed in the clinic. The Dyadic Parent-Child Interaction Coding System-Revised (DPICS-R) was used to score observations of parent-child dyads (Eyberg & Robinson, 1996). DPICS-R is an observational measure developed specifically for recording the behavior of conduct-problem children and their parents. DPICS-R consists of 35 behavior categories. In this study we were interested in two summary variables for parents: (a) inappropriate parenting consisting of negative parenting statements + physical negative behaviors + negative commands; and (b) appropriate parenting consisting of positive parenting + positive affect + acknowledgements + reflective statements/questions. Two summary variables for the child's behavior were created: (a) total child deviance (whine/yell/cry + physical negative + smart talk + aggression + disobedience) and (b) total positive affect (smiles + affectionate touch + positive talk). Each parent-child dyad was observed in a standard situation, each situation lasting for 5 minutes. First, the child chose a toy-based activity. Second, the parent chose the activity, and finally, the child and parent were to tidy away the toys. Ten trained observers scored the videotapes of parent-child interactions. The observers were blind to the hypotheses in this study. Observers were trained for 80 hours and had to maintain an inter-rater reliability of 0.80 on practice tapes. In order to maintain levels of accuracy, observers met regularly for training sessions, coding videotaped interactions and discussing their coding.

Statistical procedures

A one-way analysis of variance (ANOVA) was conducted to test whether there were sex differences related to parental reports. Effect sizes (ES) were calculated to consider the relative amount of differences between girls and boys. ES of teachers' and parents' reports of intensity and perceived difficulties in handling disruptive behaviors were calculated using the formula $ES = \text{mean difference}_{(\text{girls}-\text{boys})} / \text{pooled SD}$. A positive ES indicated that the variable of interest was larger for girls, while a negative ES indicated the opposite effect. The adjusted mean differences between girls' and boys' scores controlling for the intensity score on the ECBI were used to calculate the ES of the variables of interest regarding parenting and family stressors, using the formula $ES = \text{adjusted mean difference}_{(\text{girls}-\text{boys})} / \text{pooled SD}$. If data were not normally distributed due to few girls, a Mann-Whitney *U*-test was conducted. We used logistic regression analysis to compare sex differences in diagnostic status. Power considerations indicated that in order to maintain a power of 0.80 with a sample consisting of 26 girls and 101 boys using a two-sample *t*-test

Table 1. Demographic information divided by the sex of the child

Demographic variable ^a	Girls (n = 26)		Boys (n = 101)	
	Mean	SD	Mean	SD
Child's age	6.60	1.18	6.62	1.39
Age at onset (months)	23.30	21.04	27.08	21.58
Mother's age ^b	31.62	4.36	33.74	6.20
Father's age ^c	33.82	5.33	36.28	6.95
Income	5.30	1.34	5.91	1.47
Number of children	2.16	0.80	2.07	0.98
	No.	%	No.	%
Single parents*	14	56	22	26.5
Child in foster care	1	4.0	6	6.2
Mothers completing high school	17	65.4	67	74.4
Fathers completing high school*	6	42.9	66	80.5

Notes: ^a Chi-square analysis or *t* tests indicated no significant differences except when indicated * $p < 0.05$.

^b *n* for mothers was 26 for girls and 101 for boys.

^c *n* for fathers was 17 for girls and 87 for boys.

(two-sided), a difference of means above 0.62 *SD* is required. In order to maintain adequate power when considering χ^2 and logistic regression procedures, a difference in the range of 25–35% is required.

RESULTS

A total of 129 children fulfilled intake criteria; one girl and one boy declined to participate in the project. This resulted in a sample of 127 participants; 26 girls and 101 boys. A total of 127 mothers served as informants, 26 mothers of girls and 101 mothers of boys. A total of 104 fathers participated, 17 were fathers of girls and 87 were fathers of boys. Table 1 presents demographic information related to the child's sex.

There were no significant differences between the groups, with two exceptions. Chi-square analysis showed that more

girls than boys lived in single-parent families, $p < 0.01$, and that fewer fathers of girls had completed high school, $p < 0.01$.

Child diagnostic status according to sex

The children had a subclinical ODD (2 girls and 14 boys) or met the diagnostic criteria for ODD (24 girls and 87 boys). Of the girls, 26.9% were diagnosed with CD, while 16.8% of the boys were diagnosed with CD, a non-significant difference. In addition, 50% of the girls and 50.5% of the boys also met diagnostic criteria for at least one or more co-morbid diagnoses. There were no significant differences in the number of diagnostic symptoms between girls and boys ($t [125] = -0.36$, n.s.). An analysis of comorbidity between ODD and other relevant diagnostic conditions (i.e. ADHD combined type, ADHD predominantly inattentive type, ADHD predominantly hyperactive-impulsive type, or anxiety) and the sex of the child showed no significant differences. Regarding ADHD, 11.5% of the girls and 18.8% of the boys met the diagnostic criteria for ADHD combined type. None of the girls and 5% of the boys were diagnosed with ADHD, predominantly inattentive type and 15.4% of the girls and 16.8% of the boys were diagnosed with ADHD predominantly hyperactive-impulsive type. A total of 15.4% of the girls and 17.8% of the boys were diagnosed as having an anxiety disorder.

Intensity of oppositional and aggressive behaviors

In general, mothers and fathers reported no sex differences in perceived intensity of disruptive behaviors. Both mothers and fathers interpreted girls' and boys' disruptive behaviors as equally difficult to deal with. Teachers perceived the boys as significantly more aggressive and less socially competent than girls. Table 2 summarizes parental and teacher reports in level of aggressive behaviors and social functioning.

During the observations according to the DPICS, there were no significant sex differences in children's positive or

Table 2. Sex differences in intensity of disruptive behaviors and social functioning in parent and teacher reports

	Informant	Girls		Boys		<i>F</i> _(df)	ES
		Mean	SD	Mean	SD		
ECBI intensity score	Mothers	160.42	26.12	155.90	21.27	$F_{1,124} = 0.85$	0.20
	Fathers	147.50	23.02	142.85	26.15	$F_{1,88} = 0.43$	0.18
ECBI problem score	Mothers	20.60	5.75	20.00	5.78	$F_{1,124} = 0.18$	0.10
	Fathers	16.31	6.60	15.55	7.51	$F_{1,88} = 0.14$	0.10
PCOMP	Mothers	13.81	7.08	14.65	6.39	$F_{1,118} = 0.12$	-0.07
	Fathers	16.55	5.45	16.23	5.51	$F_{1,74} = 0.04$	0.06
SCBE-Aggression	Teachers	3.00	0.63	2.36	0.77	$F_{1,112} = 13.36^*$	-0.86
SCBE-Social competence	Teachers	2.53	0.76	2.05	0.54	$F_{1,112} = 12.09^*$	-0.77

Note: ECBI = Eyberg Child Behavior Inventory, PCOMP = Social Competence Scale-Parent, SCBE = Social Competence and Behavior Evaluations.

* $p < 0.01$.

Table 3. Sex differences in parenting and family stressors

		Girls Mean (SD)	Boys Mean (SD)	$F_{(df)}$	ES ^a
Parenting:					
Harsh discipline	Mothers	2.42 (0.64)	2.22 (0.51)	$F_{1,118} = 2.72$	0.36
	Fathers	2.52 (0.83)	2.26 (0.49)	$F_{1,87} = 2.39$	0.48
Inconsistent discipline	Mothers	3.37 (0.88)	3.15 (0.61)	$F_{1,120} = 2.09$	0.32
	Fathers	3.36 (0.81)	3.03 (0.63)	$F_{1,88} = 2.60$	0.57
Appropriate discipline	Mothers	4.33 (0.63)	4.31 (0.66)	$F_{1,119} = 0.02$	0.01
	Fathers	4.07 (0.62)	4.19 (0.58)	$F_{1,86} = 0.46$	-0.12
Family stressors:					
PSI child domain	Mothers	139.39 (16.05)	129.66 (23.86)	$F_{1,90} = 3.73$	0.40
	Fathers	124.86 (13.93)	126.49 (21.84)	$F_{1,64} = 0.04$	-0.21
PSI parent domain	Mothers	148.53 (26.85)	131.87 (2.51)	$F_{1,82} = 6.29^*$	0.58
	Fathers	140.14 (15.64)	119.06 (25.13)	$F_{1,56} = 4.64^*$	1.00
BDI	Mothers	11.54 (8.97)	5.90 (5.81)	$F_{1,121} = 15.03^{**}$	0.77
	Fathers	4.67 (4.40)	2.95 (3.24)	$F_{1,86} = 2.62$	0.74
BAAQ	Mothers	8.77 (3.92)	7.34 (2.77)	$F_{1,119} = 4.51$	0.42
	Fathers	7.33 (2.27)	6.29 (3.43)	$F_{1,88} = 1.02$	0.47

Notes: PPI = Parenting Practices Interview, PSI = Parent Stress Index, BDI = Beck Depression Inventory, BAAQ = Brief Anger-Aggression Questionnaire, ES = Effects Size.

^a ES' are calculated using ANCOVA adjusted mean values.

* $p < 0.05$, ** $p < 0.01$.

negative behaviors. Observations indicated higher levels of child deviance in boys than in girls interacting with their mothers, $Z = -1.77$, $p = 0.09$. Boys had higher levels of positive behaviors in interaction with their fathers than girls, $Z = -1.69$, $p = 0.10$. Girls interacting with fathers were somewhat more deviant than boys, $Z = 1.94$, $p = 0.06$.

Parenting practices and family factors according to the child's sex

Comparisons of the reports of mothers and fathers on discipline style revealed no significant differences in the use of harsh discipline strategies, appropriate discipline strategies or inconsistency in parenting practices according to the child's sex. However, it is of interest to notice that both mothers and fathers reported higher levels of harsh disciplining strategies directed at girls than at boys. The observations revealed no significant differences between parents' use of appropriate or inappropriate parenting strategies.

Girls' parents reported significantly higher levels of stress on the parent domain of the PSI, and mothers of girls also reported a significantly higher level of depressive symptoms, when the severity of disruptive behaviors was controlled for. Although not significant, it is of some interest to notice that parents of girls reported being more aggressive than parents of boys. Table 3 presents detailed information regarding parenting practices, family factors and sex differences.

DISCUSSION

The children's behaviors were highly disruptive irrespective of the child's sex, and generally speaking the similarities are more obvious than the differences in the functioning of these girls and boys and their families. Nevertheless, some important differences were identified. Parents reported high levels of parental stress in relation to the children's disruptive behaviors, irrespective of the sex of the child. Still, both mothers and fathers reported significantly higher levels of stress and elevated levels of depressive symptoms when a girl was involved. Parents of girls reported elevated stress due to uncertainty in parenting, while the stress as a result of the child's behaviors as such did not differ in the families of girls and boys. It is not clear whether the high level of parental stress among girls' parents is influenced by girls' antisocial behaviors being inconsistent with traditional sex-role expectations, making parents more uncertain in their perceived parenting skills. Maternal stress levels are correlated with the intensity of disruptive behaviors (Eyberg *et al.*, 1992), and may thus rise if girls' behavior is in conflict with expectations of how girls should behave. There was a significantly higher number of single-parent families of girls, and fewer fathers had completed high school. These stressors might also influence the level of stress in these families. Future studies should investigate the potential contribution of heightened levels of stress and parental depression caused by girls' oppositional and aggressive behaviors. Assuming that family

processes are influenced by heightened stress and depressive symptoms in the parents, these factors could be influential in treatment.

A high proportion of the children met diagnostic criteria for one or several comorbid diagnoses to ODD. However, we found no differences between boys and girls related to comorbidity of ODD and ADHD, or ODD and anxiety. This could indicate that the relative risk of developing disruptive behaviors in relation to comorbidity is independent of the child's sex. The fact that approximately half of the girls and boys met at least one or several diagnostic criteria in addition to ODD indicates this. Our finding that girls with ODD are at the same relative risk of ADHD, primarily hyperactive type, could imply that ADHD is an important risk factor for developing aggressive behaviors in young girls as well as boys. Maughan *et al.* (2004) reported a tendency for comorbidity of ODD/CD and ADHD to be stronger in girls than boys, which suggests that ADHD is a major risk factor for ODD and CD in girls too. Furthermore, none of the girls in our study had ADHD primarily inattentive type, which is consistent with findings that girls with ADHD of a combined type are more aggressive than girls who are predominantly inattentive (Zalecki & Hinshaw, 2004).

Teachers reported boys as being more aggressive and less socially competent than girls. These findings illustrate that these children's behavior is perceived differently in different settings. In general, boys are regarded as being more disruptive in school settings than girls (Hudziak *et al.*, 2003; LaFreniere & Dumas, 1996; Schmidt, Demulder & Denham, 2002), and our findings suggest this is true for oppositional children in Norway as well. We did not find any sex differences in social functioning in parents' reports.

Whether parental stress does in fact influence parenting practices in the families involved is unknown. We found no major differences in parenting practices related to the child's sex. There were no significant differences during the observations and parents did not report any significant differences in parenting practices. In previous research, similar coercion processes were employed vis-à-vis girls and boys (Eddy, Leve & Fagot, 2001). There was a general tendency for mothers and fathers to use less appropriate parenting practices in dealing with girls. However, it is possible that the use of negative parenting practices is related to the parents of girls being more aggressive. Although these tendencies were not significant, parental aggression might in turn influence parenting practices. It is not clear whether parental stress influences or is an effect of higher levels of parental aggression, or both, and the design of this study is not suitable for further exploration of this possibility. In other populations with oppositional and aggressive children, parenting does not seem to differ markedly due to the child's sex (Moffitt *et al.*, 2001; Webster-Stratton, 1996). The lack of any trends relative to parenting indicates that the findings in this study are in accordance with those of previous studies. It is uncertain whether parenting influences girls and boys differently,

making one or the other sex more likely to develop oppositional and aggressive behaviors.

It is important to consider two limitations of this study when discussing the implications of these findings. The first of these relates to sample size. The number of girls in this study was small and the power of some of the tests conducted was consequently low where there were small or moderate sex differences. This is especially important to bear in mind in considering fathers' reports of girls' behavior, and conditions co-morbid with ODD. The second limitation is that these girls may comprise a unique sample of girls with disruptive behavior disorders, which would complicate the applicability of any general conclusions made from our findings. Caution is therefore essential when interpreting the results. Still, even when these considerations are taken into account, we are unaware of other studies that have explored sex differences in young children related to diagnostic information and various family variables, including parenting, and as such our work is of relevance. The girl/boy ratio of this sample was approximately 1:4 which is fairly consistent with the sex ratio of disruptive behavior problems (APA, 2000). Nevertheless, it is possible that only girls with moderate to severe ODD were referred for treatment in this sample. If this is the case, it indicates that girls with less severe oppositional and aggressive behaviors are not referred to for suitable treatment, which in turn could be a reason for concern.

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