Sex differences in oppositional defiant disorder

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The goal was to analyze the sex differences in symptoms, comorbidity and functional impairment in outpatient children with Oppositional Defiant Disorder (ODD). A sample of 343 children, aged 8 to 17 years and diagnosed with ODD, were assessed with a semi-structured diagnostic interview and dimensional measures of psychopathology and functional impairment. Boys with ODD more frequently displayed the symptoms «deliberately annoys» and «blames others», presented comorbid ADHD, and had greater functional impairment in school and community contexts; girls presented higher comorbidity with internalizing symptomatology (anxiety, depression and somatic complaints). Given that some clinical differences are apparent in ODD between boys and girls, it is necessary to consider the sex of the patient in order to identify and treat this disorder efficiently and effectively in boys and in girls.

Diferencias de sexo en el trastorno negativista desafiante. El objetivo es analizar las diferencias de sexo en la prevalencia, sintomatología, comorbilidad y deterioro funcional en pacientes externos con Trastorno Negativista Desafiante (TND). Una muestra de 343 niños y adolescentes de entre 8 y 17 años diagnosticados de TND fueron evaluados con una entrevista diagnóstica semiestructurada y otras medidas dimensionales de psicopatología y deterioro funcional. Los niños con TND mostraron con mayor frecuencia los síntomas «molestar deliberadamente» y «acusar a otros», mayor comorbilidad con trastorno por déficit de atención con hiperactividad y mayor deterioro funcional en el colegio y en la comunidad; las niñas presentaron mayor comorbilidad con sintomatología interiorizada (ansiedad, depresión y quejas somáticas). Niños y niñas presentan un cuadro clínico de TND con algunas diferencias. Es necesario adoptar una perspectiva de sexo para identificar y tratar el TND de manera eficaz y eficiente en niños y en niñas.

The study of sex differences in childhood psychopathology has gained relevance in recent years. Identifying these differences should permit the development of diagnostic instruments appropriate for boys and girls that avoid biases due to sex (under- or over-diagnosis) and prevention and treatment programmes adapted to the common and differential variables for each sex. Among externalizing disorders, oppositional defiant disorder (ODD) is one of those requiring most research in this regard, given its prevalence and the scarcity of studies carried out to date.

The prevalence of ODD in the general population is situated between 4% and 8% (DSM-IV-TR, 2000). Various studies have shown that the prevalence of ODD is greater in boys than in girls (Kroes et al., 2001; Lahey et al., 2000; Maughan, Rowe, Messer, Goodman, & Meltzer, 2004). However, questions have arisen over whether this difference is real, or an effect of the way the disorder is defined. In the last ten years there has been a debate over whether it is appropriate to use common diagnostic criteria for boys and girls in externalizing disorders such as ODD. Girls' aggressiveness is manifested in covert, less observable ways, with the purpose of excluding peers, whilst boys' aggressive behaviours are more obvious, and have been associated with deficits in moral processing (Kann & Hanna, 2000). Although few studies have dealt with this issue, Waschbusch and King (2006) suggested that there may be a sample of girls with behaviour problems, with greater impairment in their level of functioning than the girls in their normative group, and whom the current diagnostic criteria fail to identify. Ohan and Johnston (2005) have proposed that the definition of ODD include relational aggression behaviours (refusing to talk to someone, being malicious, avoiding blame) in the identification of girls with oppositional characteristics.

The fact that the tendency to present oppositional behaviours and disruptive emotions (anger, poking fun, etc.) is more commonly observed in boys than in girls is consistent with the theory that the expression of anger is more common and acceptable in boys, which may explain, in part, the greater presence of externalizing problems in boys (Bird, 2006; Chaplin, Cole, & Zahn-Waxler, 2005). However, in clinical samples, ODD is also associated with anxiety disorders. Garland and Garland (2001) suggest a bidirectional relationship between oppositional behaviour and anxiety, pointing out that ODD may be a precursor of anxiety problems in the future. These authors also observed that in children with higher levels of anxiety, this anxiety was often manifested through oppositional behaviour. In their study with 145 pre-adolescents, 31% presented a diagnosis of ODD with comorbidity of some anxiety disorder.

In a similar line, Lavigne et al., (2001) reported that oppositional behaviour was related to the development of mood and anxiety disorders. In their longitudinal study with 280 pre-schoolers, over 4-6 years of follow-up, children with symptoms of ODD maintained those symptoms and showed an increase in comorbidity with mood and anxiety disorders and attention-deficit hyperactivity disorder (ADHD). Although there is evidence of comorbidity between ODD and internalizing disorders, it is not clear whether this association is stronger in boys or in girls.

Sex differences in the comorbidity of oppositional behaviour, both with other externalizing disorders and with internalizing disorders, imply different biological and socialization factors. Studies on role expectations according to sex have shown that boys learn that anger and aggression are more acceptable emotions in males than anxiety, sadness or fear (Garside & Klimes-Dougan, 2005; Mireault, Rooney, Kouwenhoven, & Hannan, 2008), and that they are reinforced more in boys than in girls (Chaplin et al., 2005). Such subtle socialization styles may contribute to differences between sexes in internalizing symptoms and in externalizing behaviours. Given that anxiety is more common among girls and oppositional behaviour is more common in boys, but at the same time anxiety and oppositional behaviour are also correlated with one another, it is important to ascertain whether greater comorbidity is associated with sex.

The association between oppositional behaviour and daily functioning difficulties has been less studied. The degree to which a particular disorder interferes with or impairs an individual's everyday life is one of the most relevant variables for reaching a diagnosis, as defined in the DSM-IV-TR (APA, 2000), and for establishing the need for intervention. Ezpeleta, Keeler, Erkanli, Costello and Angold (2001) found a greater association between severe difficulties in relations with peers and in family functioning in ODD than in conduct disorder (CD). Likewise, despite the fact that psychological distress is not a criterion of clinical significance in ODD, individual symptoms of ODD have been reported to be significantly associated with distress (Ezpeleta, Reich, & Granero, 2009).

In such a context, the present work analyzes sex differences in prevalence, symptomatology and comorbidity in child psychiatric outpatients diagnosed with ODD. Better knowledge of the manifestations of ODD in boys and in girls will help to improve the detection of this problem and to treat it more effectively.

Method

Participants

Of a total of 689 children aged 8 to 17 from three primary psychiatric care centres for children and adolescents in the public health network of the Barcelona area (selected on the basis of availability), the final participants were 343 children with a diagnosis of Oppositional Defiant Disorder (n= 199 boys; 58%). Mean age of the participants was 13.3 years (SD= 2.3) (boys M= 12.8; SD= 2.3; girls M= 14.1; SD= 2.1). As regards ethnicity, 96.5% were European-Mediterranean and 3.5% were of other ethnic origin.

Socioeconomic status (SES) was estimated by combining educational level and occupation reported by the mother and father according to Hollingshead's (1975) index: 29.7% were low socioeconomic status, 56.8% were medium and medium-low SES, and 13.5% were medium-high and high SES. Just 3.6% of the

families (n= 25) refused to participate in the study. In the group that refused to participate there were more girls (p= 0.012) and the children were older (p= 0.037) than in the group who agreed to participate, but there were no differences by socioeconomic status (p= 0.771).

Instruments

Diagnosis of the children was established with the *Diagnostic Interview for Children and Adolescents-IV* (DICA-IV) (Reich, Shayka & Taibleson, 1991) in its three versions: for children (8-12 years), for adolescents (13-17 years) and for parents. The DICA-IV is a semi-structured diagnostic interview based on the criteria of the DSM-IV (APA, 1994), which covers the diagnostic categories most commonly found in children and adolescents. It obtains information on the lifetime presence or absence of symptoms in the child or adolescent. Diagnoses are generated by combining the information from parents and children; the symptom is considered to be present when both the child and the parents report it. The psychometric properties of the Spanish adaptation are good (de la Osa, Ezpeleta, Doménech, Navarro, & Losilla, 1997; Ezpeleta, de la Osa, Doménech, Navarro, & Losilla, 1997).

The *Child and Adolescent Functional Assessment Scale* (CAFAS) (Hodges, 1997) assesses level of functional impairment. Scores are assigned by the clinician after obtaining the information from the parents or the child in the assessment process, taking into account age, sex, social class and the individual's cultural context. The instrument comprises eight subscales representing the following functioning domains: home, school/work, community, behaviour toward others, moods/emotions, self-harmful behaviour, thinking, and substance use. Each domain receives points as follows: 30 (severe impairment), 20 (moderate impairment), 10 (mild impairment) and 0 (minimal/none). The scale can be used from the age of 7 to 17. The psychometric properties of the instrument have been widely studied by the author (Hodges, 1999) and in the adaptation for Spanish samples (Ezpeleta, Granero, de la Osa, Doménech, & Bonillo, 2006).

The *Child Behavior Checklist* (CBCL/6-18) for parents and the *Youth Self-Report* (YSR/11-18) for young people aged 11 to 18 (Achenbach & Rescorla, 2001) assess psychopathology in 10 behaviour dimensions, as well as providing a total score that reflects the respondent's global psychopathology. The psychometric properties of the instruments in Spain are adequate (Abad, Forns, Amador, & Martorell, 2000; Sardinero, Pedreira, & Muñiz, 1997). Raw scores were used in the present study.

Procedure

The study was approved by the Ethics Committee of the institution responsible for the research. Written informed consent was requested from parents before they participated in the study. Different assessors interviewed the children or adolescents and their parents simultaneously. Interviewers had previously been trained in the administration of the different assessment instruments used in the study, and had clinical knowledge of psychopathology and child development. After application of the DICA-IV the interviewer scored the CAFAS. The CBCL/6-18 questionnaire was given to parents so that they could return it completed at the next interview; the same procedure was used for the YSR/11-18, which was administered to children from age 11.

In the original sample of the study 398 families (62.1%) returned the completed CBCL questionnaire. There were no differences by sex (p= 0.278), socioeconomic status (p= 0.895), age (p= 0.337) or diagnosis of ODD (p= 0.483) between the children whose parents filled out the questionnaire and those who did not. Administration of the YSR began later in the study. Of the 186 YSR questionnaires given out in the original sample, 103 (54.4%) were returned. There were no differences by sex (p= 0.833), socioeconomic status (p= 0.157), age (p= 0.097) or diagnosis of ODD (p=0.217) between the children who replied to the questionnaire and those who did not. The analyses presented for the sample with ODD correspond to 195 CBCLs and 59 YSRs.

Both father and mother took the interview in 48.7% of cases, the mother only in 47.2%, the father only in 2.6% and another person with good knowledge of the child in 1.5% of cases. The CBCL was answered by both parents in 50.5% of cases, by the mother only in 45.2% and by the father only in 4.3%.

Data analysis

The data were analyzed using SPSS 17.0 for Windows. We compared the prevalence of ODD symptoms and diagnosis in boys and girls by means of logistic regression adjusted for age, other comorbidity and other ODD symptoms. Comparison of total number of ODD symptoms in boys and girls was made by means of negative binomial regression, adjusting for age and other comorbidity. The association between functional impairment and sex was analyzed through multiple regression adjusted for age and other comorbidity, as were the mean scores on the CBCL and YSR. Finally, the association between other variables related to the clinical significance of the DICA-IV and sex, as well as the association between comorbidity and sex, were analyzed by means of logistic regression adjusted for age and other comorbidity.

Results

Prevalence of symptoms by sex

Table 1 shows the prevalence results in boys and girls for each one of the ODD symptoms and the results of the logistic regression adjusted for sex, other comorbidity and other ODD symptoms. Symptoms more frequently presented by the boys than the girls were: annoying people deliberately and blaming others.

Association between functional impairment and sex

Table 2 shows the mean scores on functional impairment and its association with sex, adjusting for age and other comorbidity. The boys presented significantly more impairment than the girls in the school, community and behaviour toward others domains. The girls scored higher in moods/emotions, self-harmful behaviour and thinking.

Table 3 shows the prevalence of other clinically significant variables referred to in the DICA-IV and their association with sex, adjusting for age and other comorbidity. Oppositional boys had been expelled from school more often and had been involved with the police more often than oppositional girls. There were no differences in the distress felt by boys and by girls due to their oppositional symptoms, or in consultations with professionals for ODD.

Table 1
Prevalence of symptoms of oppositional defiant disorder and association with sex

ODD Symptoms	Prevalence (%)		OR [a] (CI 95%)	P
	Boys	Girls		
Loses temper	95.5	97.2	0.65 (0.18;2.4)	0.520
Argues	91.0	93.1	0.80 (0.32;2.02)	0.800
Defies	69.8	77.1	0.60 (0.34;1.05)	0.073
Annoys	**74.9**	46.5	3.3 (2.0;5.3)	**<0.001**
Blames others	**80.9**	67.4	2.1 (1.2;3.6)	**0.006**
Touchy-easily annoyed	76.9	80.6	0.92 (0.51;1.6)	0.778
Angry-resentful	68.3	74.3	0.66 (0.38-1.1)	0.134
Spiteful-vindictive	59.8	45.1	1.5 (0.96;2.5)	0.074
Nº symptoms ()	6.2	5.8	1.1 (0.95;1.4)[b]	0.628

[a] OR Logistic regression adjusting for age, other comorbidity and other ODD symptoms
[b] OR Negative binomial regression adjusting for sex and other comorbidity
In bold: significant association

Table 2
Mean scores in functional impairment and association with sex

CAFAS	Mean score		B [a] (CI 95%)	P
	Boys	Girls		
Home	15.28	16.87	-0.75 (-2.5; 1.0)	0.412
School	**23.1**	18.8	5.6 (3.5; 7.7)	**<0.001**
Community	**5.72**	3.96	2.7 (1.003; 4.4)	**0.002**
Behaviour toward others	**14.22**	12.24	2.3 (0.53; 4.1)	**0.011**
Moods/emotions	12.22	**18.96**	-5.8 (-7.7; -3.9)	**<0.001**
Self-harm	10.5	**17.54**	-6.2 (-8.1; -3.9)	**<0.001**
Thinking	1.67	**4.03**	-2.1 (-3.4; -0.71)	**0.003**
Substance use	3.39	5.45	0.06 (-1.6; 1.7)	0.942
Total	71.8	80.6	-8.8 (-21.6; 3.8)	0.171

[a] B coefficient in Multiple Regression adjusting for age and other comorbidity
In bold: significant association

Table 3
Association between other variables related to clinical significance of the diagnostic interview and sex

CAFAS	Prevalence (%)		OR [a] (CI 95%)	P
	Boys	Girls		
Expulsion	**28.6**	15.03	3.7(1.3;10.2)	**0.013**
Involvement with police	**18.6**	16.0	4.3(1.1;17.3)	**0.040**
Distress	55.2	53.7	1.1(0.45;2.5)	0.912
Seek professional help for ODD	85.3	55.9	5.3(0.93;30.7)	0.061

[a] Logistic regression adjusting for age and other comorbidity
In bold: significant association

Association between mean CBCL and YSR scores and sex

Table 4 shows the mean scores on the CBCL/6-18 and YSR/11-18 and their association with sex, adjusting for age and other comorbidity. According to the information from parents, the girls scored higher in anxious-depressive symptoms and had more somatic complaints and more internalizing problems, whilst the boys presented more attentional problems. In the reports by the young people themselves, the girls reported more anxious-depressive symptoms and more somatic complaints and scored higher on internalizing and total symptoms.

Association between sex and comorbidity

Table 5 shows the association between sex and comorbidity assessed with the diagnostic interview, adjusting for age and other comorbidity. In the boys, ODD was significantly associated with ADHD, whilst in the girls it was associated with major depression and generalized anxiety.

Table 5
Association between comorbidity and sex

	Prevalence (%)		OR[a] (CI 95%)	P
	Boys	**Girls**		
ADHD	**68.7**	36.1	4.4 (2.1; 8.9)	**0.0001**
Conduct disorder	31.7	25.0	1.1 (0.45;2.4)	0.916
Substance use/abuse	9.9	23.6	1.3 (0.27;6.3)	0.746
Major depression	11.6	**35.7**	0.41 (0.20;0.84)	**0.015**
Separation anxiety disorder	11.6	15.3	0.99 (0.43;2.3)	0.988
Generalized anxiety disorder	17.1	**43.8**	0.44 (0.23;0.86)	**0.016**
Social phobia	12.1	19.4	0.90 (0.41;1.97)	0.783
Simple phobia	31.7	34.0	1.01 (0.54;1.90)	0.972
Obsessive-compulsive disorder	5.0	11.1	0.59 (0.21;1.67)	0.317
Post-traumatic stress disorder	0.5	7.6	0.12 (0.01;1.2)	0.071

[a] Logistic regression adjusting for age and other comorbidity
In bold: significant association. ADHD: Attention Deficit/Hyperactivity Disorder

Table 4
Mean scores on CBCL and YSR and association with sex

CBCL	Mean score		B[a] (CI 95%)	P
	Boys	**Girls**		
Anxiety-depression	6.7	**8.3**	-1.50 (-2.7; -0.30)	**0.015**
Withdrawal-depression	4.3	4.85	-0.13 (-1.02; 0.76)	0.780
Somatic complaints	3.4	**4.7**	-1.03 (-2.04; -0.008)	**0.048**
Thought problems	3.6	4.4	-0.84 (-1.8; .15)	0.094
Social problems	5.4	5.3	-0.02 (-0.97; 0.94)	0.973
Attention problems	**10.6**	7.96	2.6 (1.5; 3.6)	**<0.001**
Rule-breaking	6.8	6.8	0.37 (-0.94; 1.7)	0.576
Aggressive behaviour	15.7	14.7	0.65 (-1.2; 2.5)	0.482
Internalizing	14.3	**17.5**	-2.5 (-4.9; -0.09)	**0.042**
Externalizing	22.7	22.3	0.57 (-2.2; 3.4)	0.688
Total	63.4	65.01	-1.26 (-8.1; 5.6)	0.719
YSR				
Anxiety-depression	6.3	**9.5**	-2.91(-5.5;-0.26)	**0.032**
Withdrawal-depression	3.5	3.9	-0.20 (-1.8; 1.4)	0.799
Somatic complaints	3.1	**5.9**	-2.7 (-4.2;-1.1)	**0.001**
Thought problems	4.9	6.2	-1.17 (-3.7; 1.3)	0.351
Social problems	5.2	6.03	-0.66 (-2.6; 1.3)	0.507
Attention problems	7.5	8.9	-1.05 (-2.7; 0.56)	0.195
Rule-breaking	6.8	7.2	0.09 (-1.9; 2.1)	0.932
Aggressive behaviour	9.5	11.8	-1.99 (-4.6; 0.56)	0.123
Internalizing	12.8	**19.2**	-5.8 (-11.1; -0.52)	**0.032**
Externalizing	16.2	18.9	-1.95 (-6.1; 2.2)	0.349
Total	72.3	**88.44**	-14.8 (-28.7; -0.92)	**0.037**

[a] B coefficient in Multiple Regression adjusting for age and other comorbidity
In bold: significant association

Discussion and conclusions

The clinical condition of ODD in boys and in girls presents differences in symptomatology, severity, associated impairment and comorbidity, which must all be taken into account in intervention for this disorder. In boys, ODD is more frequently found with symptoms such as deliberately annoying and blaming others and with greater functional impairment at school and in the community, and is associated with ADHD. In girls, ODD is associated with depressive and anxiety disorders and internalizing symptoms (anxiety, depression and somatic complaints). These results suggest that therapeutic approaches with boys and girls with ODD should include different elements.

Previous studies have found that boys tend to present more oppositional behaviours than girls. The analysis of the present study's findings reveals that these oppositional behaviours revolve around deliberately annoying people and blaming others, behaviours which are manifestations of aggressiveness and that give rise to conflict in relationships with peers and family. Boys, from as early as pre-school age, show more direct physical aggression, more readily become involved in conflicts than girls, and display a competitive-aggressive form of interaction, whilst girls are more cooperative-conciliatory (Ezpeleta, 2005). These relational and behavioural patterns in boys and in girls are maintained throughout childhood and adolescence (Zahn-Waxler, Crick, Shirtcliff, & Woods, 2006), so that it is important to identify at an early stage those which indicate risk (aggressiveness) and redirect them, as well as fostering adaptive behaviours. The target group for such detection would be males.

The results on internalizing comorbidity in girls and externalizing comorbidity in boys, assessed both dimensionally and categorically, are in the line of previous work (Albano & Krain, 2005; Boylan, Vaillancourt, Boyle, & Szatmari, 2007; Chaplin et al., 2005; Lavigne, 2001; Silverman & Carter, 2006). In this sense, it is interesting to note the consistency found in the present study, regardless of the reporter, with regard to the greater severity in girls of anxious-depressive symptoms, of somatic complaints and of internalizing symptoms.

These data highlight the fact that prevention and treatment programmes for ODD should include the prevention and treatment of the comorbid disorders described. While treatment for ODD is common for boys and girls and should focus on the training of parents in behaviour modification techniques (learning to how increase the reinforcement of appropriate behaviours and to apply extinction and time-out) (Eyberg, Nelson, & Boggs, 2008), the approach to the prevention and treatment of comorbid disorders should be different in boys and in girls. Girls diagnosed with ODD are at greater risk of developing anxiety or depressive conditions, and should receive treatment aimed at promoting strategies for mood regulation. As regards prevention, they should be taught techniques of self-control, problem-solving, cognitive restructuring and relaxation, and their self-esteem, social skills and assertive communication ability should be developed. All of these components of cognitive-behavioural therapy are backed up by numerous efficacy studies and underpinned by evidence-based therapeutic perspectives (David-Ferndon & Kaslow, 2008).

There are also differences in the way the symptoms affect one sex or the other in everyday life: boys present more impairment than girls. That is, in boys who seek professional attention, the oppositional behaviour has greater impact on the school and community contexts and on relations with others than those same behaviours in girls. This greater impact in boys, regardless of comorbidity, together with the association with ADHD, may explain why professional help is more often sought for boys than for girls (Cabiya, Canino, & Chávez, 2006). The association of ODD with ADHD increases the degree of impairment and the probability that significant others will be aware of the problem and, consequently, will seek professional help for the child (Hartung et al., 2002). The treatment is also different, at least as regards treatment with stimulants, which are prescribed less frequently in girls and more frequently when ADHD is associated with ODD (Angold, Erkanli, Egger, & Costello, 2000).

It is essential, therefore, in children diagnosed with ODD, to assess whether they also meet the criteria for ADHD, and if so, also treat that condition, for which effective psychological treatments are available (Pelham & Fabiano, 2008).

In the present study, girls were less likely than boys to seek professional help for ODD (55.9% in girls versus 85.3% in boys, which almost reaches statistical significance). This highlights the need for the detection of ODD in girls since, on presenting less impairment and more internalizing problems (which do not affect the community as much as externalizing problems), they may not seek or receive professional attention.

In conclusion, the results of this study underscore the need to consider sex as a relevant variable to be taken into account in diagnosis and in preventive and treatment initiatives. Prevention and treatment programmes aimed at boys should focus on externalizing disorders, whilst those aimed at girls should consider the comorbidity of ODD with internalizing disorders.

Among the limitations of the study we should mention that the results are only generalizable to children who seek psychological help as outpatients. It should also be stressed that the results with the YSR correspond to a relatively small group which it would be useful to enlarge in the future. As regards the percentage of refusals to participate in the study, it was significantly higher in girls and among the elder children. These refusals represent a very small proportion (25 cases) of the total sample, so that any possible bias would have very little relevance. However, and in line with the findings of previous studies (Cabiya et al., 2006; Ezpeleta, Granero, de la Osa, & Doménech, 2009), girls' difficulties for receiving or using mental health services are apparent, as is the need to improve the attention they are given. Future studies should analyze sex differences in ODD in the general population, with diagnostic assessment tests that include symptoms of covert aggression, more characteristic of girls.

Acknowledgements

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