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Teacher Reports of Peer Aggression in Preschool: its Relationship to DSM-IV Externalizing Symptoms

Edelmira Domènech-Llaberia[1], M. Claustre Jané[1], Teresa Corbella[2], Sergi Ballespí[3], Mercè Mitjavila[1], and Josepa Canals[2]

[1]Universitat Autònoma de Barcelona (Spain),
[2]Universitat Rovira i Virgili (Spain)
[3]Universitat de Barcelona (Spain)

Objective: to establish the prevalence and associations of peer aggression as manifested in preschool children, in community-based populations and to study links with DSM-IV externalizing diagnoses. Method: Subjects were 1,104 children, 3-to-5-year-olds attending rural and urban pre-schools classes. Teachers completed the Peer Conflict Scale (PCS) to inform about direct physical and verbal aggression, object aggression and symbolic aggression and the questionnaire on psychopathology ECI-4. Results: 6.6% (n = 73) had at least one positive item on the PCS. This percentage dropped to 2.6% (n = 29) if we take into account a minimum of three positive items. Physical direct aggression was the more prevalent type of aggressive behavior, followed by verbal aggression, object aggression and symbolic aggression. Significant differences by gender and age were found. Peer aggression was associated with male gender from three years of age. Physical, object and verbal aggressive behavior was linked with externalizing disorders. This association was very strong with oppositional disorder. Conclusions: The present research with a Spanish population confirms the existence of peer aggression in preschoolers and the gender differences. Our chief contribution is about the age of emergence of sex differences and gender differences in different types of peer aggression.
Keywords: preschool peer aggression, preschool externalizing disorders, peer conflict scale (PCS)

Objetivo: Determinar la prevalencia de agresión preescolar hacia iguales en la comunidad y su correlación con categorías externalizantes del DSM-IV. Método: La muestra fue de 1104 niños de 3 a 6 años, procedentes de aulas preescolares urbanas y rurales. Se aplicó a los maestros la Peer Conflict Scale (PCS), para recabar información de agresiones físicas directas, verbales, con objetos y simbólicas, y el cuestionario de psicopatología ECI-IV. Resultados: Un 6.6% (n = 73) puntuó positivamente por lo menos en un item de la PCS. Este porcentaje decreció hasta un 2.6 % (n = 29) con una definición de caso más exigente (mínimo tres ítems positivos). La agresión física directa fue la forma más frecuente de agresión seguida de agresión verbal y agresión con objetos. Hubo diferencias significativas según edad y sexo. La agresión dirigida a iguales se asocia al sexo masculino desde los 3 años. La agresión física directa, con objetos y verbal correlaciona con trastornos externalizantes, principalmente con trastornos oposicionistas. Conclusiones: Esta investigación en población española confirma la existencia de agresividad hacia iguales en preescolares así como diferencias según sexo. Nuestra principal aportación es haber encontrado diferencias de sexo en el inicio y en los tipos de agresividad hacia iguales.
Palabras clave: agresión preescolar hacia iguales, trastornos preescolares externalizantes, PCS

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Correspondence concerning this article should be adressed to Edelmira Doménech-Llaberia, Departamento de Psicología Clínica y de la Salud, Universitat Autònoma de Barcelona, Campus de Bellaterra, Edifici B, 08913-Bellaterra, Spain. E-mail: edelmira.domenech@uab.es

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Research has shown that serious externalizing symptoms can be identified in the toddler and preschool years (Olson, Bates, Sandy, & Lanthier, 2000; Willoughby, Kupersmidt, & Bryant, 2001). Nevertheless, peer aggression was rarely identified in preschool children (Sprafkin & Gadow, 1996). In developmental literature the difficulties in peer relations has received much attention although much of this work has focused on elementary-school-age children (Keane & Calkins, 2004).

Some degree of aggressive behavior towards peers is commonly seen in preschool children and is not necessarily indicative of emotional or behavioral disturbance and only represents a normal reaction to developmental demands. However, when it becomes harsh and persistent, it is a risk factor for present and future psychopathology (Khatri, Kupersmidt, & Patterson, 2000; Schaeffer, Petras, Petras, Poduska, & Kellan, 2003).

Whilst aggression towards peers in older children may take the form of bullying, it may be expected to be less complex and organized in younger children, and the terms peer aggression and peer conflict seems more appropriate in this age group. The literature on bullying in school-children has been growing in recent years (Alsaker, 1993; Boulton & Smith, 1994; Bukowsky & Adams, 2005; Collell, 2003; Craig, 1998; Dill Vernberg, Fonagy, Twenlow, & Gammn, 2004, Dodge, Lochman, Harnish, Bates, & Petit, 1997; Elinoff, Chafouleas, & Sassu. 2004; Escudé, 2003; Kaltiala-Heino, Rinpelä, Martumen, & Rimpelä, 2000; Khatri et al., 2000, Kumpulainen, Rasanen, & Entonen, 1999; Masten, 2005; Maumary-Gremaud, & Bierman, 2002; Miller-Johnson, Coie, Maumary-Gremaud, & Bierman, 2002; Olweus, 1993, 2001; Pellegrini, Bartini, & Brooks, 1999; Shields & Cicchetti, 2001).

However, we do not know the prevalence of the possible precursors of peer aggression in preschool children nor the age and gender differences in this age group. Descriptive studies of psychopathology in community samples of preschoolers are few, and they have not focused specifically on peer aggression (Campbell, 1995; Earls, 1982; Gadow, Sprafkin, Nolan, & Kelly, 2001; Keenan, Shaw, Walsh, Delliquadri, & Giovanelli, 1997; Koot & Verhulst, 1991). Nevertheless, in 1977, Richman had already included an item about "relationship with sibs and peers" in her initial behavior checklist for preschool children.

Neither is much known about associations of preschool peer aggression with psychopathology. Furthermore, the developmental literature has documented the role of early school-age aggression and peer rejection in the development of early conduct problems (Asher & Parker, 1989; Coie, Dodge, Ferry, & Wright, 1991; Miller-Johnson et al., 2002). The literature on school children and early adolescents with ADHD, ODD and CD has shown definite links with aggressive behavior towards peers or bullying (Kokkinos & Panayiotou, 2004). Therefore, it is interesting to study whether these associations can already be seen in younger children.

Better knowledge about the nature and associations of problems involving peer aggression in young children is needed to inform therapeutic work.

The present study has three objectives: (a) to establish the prevalence of peer aggression as manifested at the kindergarten in two (urban and rural) community-based populations; (b) to document possible associations with age, gender, geographical and socioeconomic factors; and (c) to study links with DSM-IV diagnoses (attention deficit hyperactivity, oppositional defiant disorder and conduct disorder).

Method

Participants

The whole population of children attending preschool public and private kindergarten in two different Catalan populations was selected for study. All these children were registered with the local education authority and had the parents' permission to take part in the study. For details of this population see Domènech-Llaberia et al. (2004). Preschool education in Spain comprises three levels: P3 (aged 3-4), P4 (aged 4-5) and P5 (aged 5-6).

The eight urban preschool kindergarten taking part in this study were located in Montcada, a small town of 27.068 inhabitants near Barcelona. A total of 696 children (349 boys and 347 girls) were evaluated. There were 27 rural kindergarten from Priorat and Ribera d'Ebre. A kindergarten was considered as rural only when was sited in a community of less than 2600 inhabitants and its population was working mostly in agriculture. All but one of the rural preschool kindergarten approached took part in the study: 220 boys and 188 girls. On the whole, 1,104 subjects took part in the study, 696 in urban and 408 in rural kindergarten.

Table 1
The Sample (n=1104, valid=1103)

		Boys n = 569 (51.5%)	Girls n = 535 (48.5%)	Total n=1104
School Grade	P3	173	197	370 (33.5%)
	P4	193	172	365 (33.1%)
	P5	203	166	369 (33.4%)
Area	Urban	349	347	696 (63%)
	Rural	220	188	408 (37%)

Measures

Measure of peer conflict. Involvement in peer aggression was evaluated using an experimental Spanish version of the Peer Conflict Scale (PCS) (Gadow, 1986; Gadow et al., 2001) which was completed by kindergarten teachers. The PCS is an instrument which contains 10 items based on the physical and non physical aggression categories of the AD/HD School Observation Code or AD/HD SOC (Gadow, Sprafkin, & Nolan, 1996). The items of the PCS are:

1. Grabs things from other children
2. Throws things at other children
3. Smashes or destroys things
4. Gives dirty looks or makes threatening gestures at other children
5. Curses at or teases other children to provoke conflict
6. Damages other child property
7. Hits, pushes or trips other children
8. Threatens to hurt other children
9. Engages in physical fights with other children
10. Annoys other children to provoke them

Each item is rated on a 4-point scale (*not at all* = 0, *very much* = 3), according to how often they had been present in the previous six months.

It can be seen that all items indicate aggressive behavior and none refers to victim behavior. All the items are age-appropriate behavior for overt and covert dimensions of peer aggression. Covert dimensions in early childhood include behavior like grabbing things from others when they are not looking or surreptitiously destroying a peer's property.

Following the different types of aggressive behaviors described by the AD/HD SOC, the PCS items were matched to four categories of aggressive behavior: (a) direct aggression against other children or physical aggression: items 1, 2, 7, and 9; (b) aggression through objects or object aggression: items 3 and 6 (if an object is thrown at another child, it must be coded as physical aggression); (c) verbal aggression: items 5 and 8; and (d) symbolic aggression: item 4 (symbolic aggression encompasses all negative, and non contact communication (Gadow & Sprafkin, 1997)). Item 10 is related to every type of aggression.

Measure of child psychiatric adjustment. Teachers completed a Spanish version of the teacher form of the Early Childhood Inventory or ECI-4 for preschool children (Gadow & Sprafkin, 1997, 2000; Sprafkin & Gadow, 1996). The ECI-4 itself is a behavior-rating scale that screens for DSM-IV behavioral and emotional disorders (American Psychiatric Association, 1994). It consists of 77 items which refer to DSM-IV based symptoms grouped in categories of psychopathology that include among others: ADHD-inattentive (9 items), ADHD-hyperactive-impulsive (9 items), ADHD-combined types, ODD (8 items) and CD (10 items). Each item has four possible answers (*never, sometimes, often,* and *very often*), according to how often they had been present in the previous six months.

There are two scoring procedures (dimensional and categorical):

The dimensional approach (symptom severity score - item prevalence): *never* = 0, *sometimes* = 1, *often* = 2, and *very often* = 3. Results are the sum by item.

The categorical approach (symptom count score – person prevalence): *never* or *sometimes* = 0, and *often* or *very often* = 1. For symptom count scores, a specific symptom is generally considered to be a clinically relevant problem if it is rated as occurring often or very often (Nolan, Gadow, & Sprafkin, 2001). Results are summed by person within each category. Then a definition of caseness is needed for the PCS. Unfortunately, as this category is not included in the DSM-IV, the ECI-4 had not a cut-off for the PCS defined. Given the fact that peer aggression is contained within conduct disorder and that it is a more restricted form of behavior, we decided, in a preliminary study, to consider a preschooler peer aggressive when at least one answer of the PCS was *often* or *very often* in the last six months (cut-off 1). Nevertheless, as some types of antisocial behavior in early childhood may represent a normal reaction to specific developmental demands, we decided also to consider the following more severe cut-off: a child was considered a case only when his score in the PCS was three or more (cut-off 3). For conduct disorders Sprafkin and Gadow (1996) consider a case is conduct disorder when a preschooler has obtained three or more answers of often or *very often* in the category of conduct disorders. The severe criterion is in line with ECI-4's approach to the identification of a probable conduct disorder diagnosis – which uses the criterion of 3 or more relevant items scores as having occurred often or very often (scores 2 and 3) in the previous six months.

Symptoms categories have an adequate internal consistency and temporal stability, and the instruments have adequate criterion validity for the majority of externalizing disorders of 3 to 6-year-olds, such as attention deficit disorders and conduct disorders (Sprafkin, Volpe, Gadow, Nolan, & Kelly, 2002).

The psychometric properties of the Spanish teacher's version of the ECI-4 were previously studied in a sample (N = 412) of preschoolers from eight schools in Girona, Catalonia, Spain (Viñas et al., 2008). In the present study, the internal consistency found was good for all categories of externalizing disorders according to Cronbach α. Results for the teachers form were α = .92 for ADHD-I, α = .91 for ADHD-H, α = .93 for ADHD-C, α = .87 for ODD and α = .76 for CD. Internal general consistency of the Spanish version of the PCS was: α = .90.

Socioeconomic and family information. Social class was rated using four-factor Hollingshead index (1975), classification based on the parental occupation and

educational level. Socioeconomic class was divided into high (social classes 1 and 2), medium (social class 3) and low (social classes 4 and 5). We obtained details about the child and his family through a questionnaire to be completed by the children's parents.

Procedure

The study was carried out after the approbation of the study protocol by the Department of Education of the Generalitat de Catalunya (Autonomous Government of Catalonia) which gave us permission to visit the schools.

In each school, parents of preschoolers were contacted via the school direction and requested to attend a meeting with teachers and research staff. 79% of parents in urban kindergarten and 73% in rural ones came to the meeting. In this meeting the purpose of the study was explained to parents and teachers.

Those who agreed to take part were given a package containing the questionnaires and instructions on how to complete them. They could either to be completed in the school itself or at home. Parents whose returned questionnaires included missing data or obvious errors were contacted for clarification.

Data Analysis

1. Dimensional approach: two-tailed mean contrast of the score per child were done, 95% confidence intervals (c.i) are given when suitable.

2. Categorical approach: chi-square test for categorical data were used as appropriate to test differences between peer conflict and non-conflict children in relation to demographic variables. Exact confidence intervals of proportions of peer conflict children with externalizing several psychopathological disorders are given as conditions of the chi-square test are not met.

In both analysis, statistical significance is accepted when *p*-values are equal to or lower than 0.05.

Results

At the time of the study 1,104 children were registered with the kindergarten under study (see table 1). There were 1,103 (99.9%) questionnaires completed by teachers and 851 parents completed Hollingshead. On the whole, mean socioeconomic level of the families, according to the Hollingshead index was low (29%) and middle (52%).

Item Prevalence (Dimensional or Symptom Severity Scoring Method)

The first results we display are the prevalence of peer aggressive behavior via teacher reports in our normative sample. Table 2 shows, stratified by gender and school year, the means and the standard deviations of the score per child for each answer.

Some types of aggression are more common than others: Item 7 (*hits, pushes, or trips other children*) has the highest mean. The second highest being the mean of item 9 (*engages in physical fights with other children*) which refers to physical aggression, and the third item 10 (*annoys other children to provoke them*). The lowest mean scores were for item 4 (*gives dirty looks or makes threatening gestures at other children*) which refers to symbolic aggression.

When we consider separately the four different types of aggressive behavior of the PCS, the highest scores in our population of preschoolers have been for physical aggression, followed by verbal aggression and object aggression, symbolic aggression coming last (see Table 2). Moreover, several significant differences by gender and age have been found.

1. Gender differences. Boys exhibit significantly higher means of individual item than girls (table 2). For all the items except the first, "Grabs things from other children", the mean of the boys more than doubles that of the girls. The higher score of the PCS in boys is 29, and in girls 14. With a score of three there are 39 boys and 16 girls; of five, 26 boys and 10 girls; of ten, we have 8 boys and 2 girls; and above ten only 3 girls against 33 boys. Differences by gender are also evident in the study of the items grouped in types of aggression. Physical, verbal and object aggression are clearly more present in boys than in girls (see figure 1 and table 2 for numerical results). It can be noted that for the type "physical aggression against other children", the first item included, grabbing, is the one that displays smaller differences by gender, while two of the other three are the ones that display higher differences.

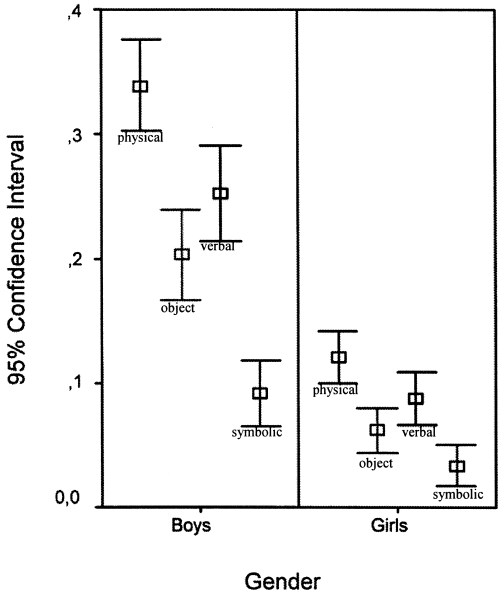

Figure 1. Group prevalence by gender
Squares: mean per item and child of the group of aggression. Whiskers: 95% confidence intervals.

Table 2
Mean (SD) of the score per child and answer (dimensional scoring) stratified by school grade and gender

		P3 Mean (SD)	P4 Mean (SD)	P5 Mean (SD)	Total Mean (SD)
1 – Grabs things from other children	Male	.173 (.395)*	.167 (.401)	.128 (.349)	.155 (.381)
	Female	.086 (.299)	.116 (.339)	.127 (.351)	.108 (.329)
2 – Throws things at other children	Male	.249 (.484)**	.283 (.495)*	.305 (.513)**	.265 (.498)**
	Female	.061 (.240)	.041 (.198)	.072 (.260)	.058 (.234)
7 - Hits, pushes or trips other children	Male	.520 (.736)**	.383 (.611)**	.547 (.676)**	.483 (.677)**
	Female	.203 (.416)	.151 (.390)	.229 (.463)	.194 (.424)
9 - Engages in physical fights with other children	Male	.382 (.633)**	.403 (.615)**	.557 (.638)**	.453 (.632)**
	Female	.086 (.282)	.076 (.265)	.205 (.434)	.120 (.336)
Physical Aggression	Male	.331 (.449)**	.300 (.426)**	.384 (.444)**	.339 (.440)**
	Female	.109 (.222)	.096 (.217)	.158 (.298)	.120 (.248)
3 - Smashes or destroys things	Male	.254 (.522)**	.187 (.452)**	.192 (.475)**	.209 (.482)**
	Female	.071 (.258)	.041 (.198)	.054 (.227)	.056 (.230)
6 - Damages other children's property	Male	.197 (.453)**	.197 (.459)*	.197 (.478)*	.197 (.463)**
	Female	.041 (.198)	.081 (.274)	.084 (.279)	.067 (.251)
Object Aggression	Male	.225 (.456)**	.192 (.426)**	.195 (.437)**	.203 (.439)**
	Female	.056 (.207)	.061 (.211)	.069 (.205)	.062 (.207)
5 – Curses at or teases other children to provoke conflict	Male	.208 (.485)**	.269 (.520)**	.357 (.592)**	.283 (.540)**
	Female	.061 (.240)	.087 (.283)	.175 (.381)	.105 (.306)
8 - Threatens to hurt other children	Male	.243 (.516)**	.166 (.437)*	.256 (.520)*	.221 (.493)**
	Female	.041 (.198)	.052 (.223)	.121 (.362)	.069 (.268)
Verbal Aggression	Male	.225 (.462)**	.218 (.420)**	.308 (.498)**	.252 (.463)**
	Female	.051 (.182)	.070 (.225)	.148 (.327)	.087 (.251)
Symbolic Aggression: 4 - Gives dirty looks or makes threatening gestures to other children	Male	.069 (.277)*	.098 (.347)	.103 (.336)*	.091 (.323)**
	Female	.015 (.123)	.047 (.237)	.042 (.202)	.034 (.191)
10 - Annoys other children to provoke them	Male	.278 (.584)**	.301 (.562)*	.370 (.642)*	.318 (.598)**
	Female	.102 (.319)	.151 (.419)	.220 (.442)	.153 (.395)

* p<0,05 for differences by gender; ** p<0,001 for differences by gender.

2. Age differences. Verbal aggression is significantly higher for the older children (P3 M = 0.123, c.i.: 0.096 - 0.168; P4 M = 0.148, c.i.: 0.112 - 0.184; P5 M = 0.236, c.i.: 0.191 - 0.280). Physical aggression increases less, differences are almost significant (the p-value of a two-tailed contrast of the differences in mean of the scores of P3 and P4 children versus P5 children is equal to 0.071). There are no significant differences for object or symbolic aggression as time goes by. An interesting result appears when we compare age differences stratifying the results by gender (Table 2). There are significant differences in the level of aggression for all types of aggression between boys and girls at all school levels: for three year-old, four year-old and five year-old children. At five years, physical and verbal aggression are higher for both boys and girls.

Rural-urban differences are not significant. Neither are those due to socioeconomic status (Hollingshead index). However, children whose fathers had completed secondary education have obtained significantly lower scores on the PCS (M = 0.075, SD = 0.531) than those with fathers without secondary education (M = 0.236, SD = 1.026). Differences in the level of education of the mother are not significant.

Person Prevalence (Categorical Scoring)

Concerning prevalence, low but definite peer aggression was reported for 73 (6.6%) children with the first definition of caseness (cut-off 1). The number lowers to 29 (2.6%) with the more severe definition of caseness (cut-off = 3) (Table 3).

There are significant differences by gender (table 3). From the 29 children of the total sample of 1,104 with at least 3 positive answers, there are 28 boys and only 1 girl; and of the 73 children with at least one positive answer, 60 are boys and 13 girls. It must be noted that boys display considerably more positive answers in every single question except item 1 (*grabs things from other children*).

There are no significant differences by school-grade nor by geographical area or by socioeconomic status. (Tables 3 and 4).

As in the previous quantitative analysis, there are also with the categorical approach significant differences by the level of education of the father (Table 4). Differences of peer aggressiveness were found with cut-off 1 between preschoolers whose fathers completed secondary education and those whose fathers had a lower degree ($\chi 2 = 6.497$, $p = 0.011$). On the other hand, there are no significant differences by level of education of the mother.

Peer Aggression and other Externalizing Behavioral Disorders (Table 5)

Our sample does not display significant differences in PC prevalence among children who have an attention deficit disorder (ADHD-I subtype) and those who have not. On the contrary, prevalence in PC of hyperactive children (ADHD:HI subtype) are higher than inattentive subtypes, as also are the ones of the combined subtype. Oppositional children also display higher PC prevalence (comparing prevalence confidence intervals, see table 5). As expected, a strong association between conduct disorder and peer conflict is found.

The numerical results are: The prevalence of ADHD inattentive subtype of the sample ($N = 1,104$) has been 4.26% (c.i.: 3.15 - 5.63) with 47 cases. Of these, only 6 were PC with cut-off 1 and 4 according to cut-off 3 (table 5). The prevalence of ADHD impulsive type was 2.54% (c.i.: 1.6 -

Table 3
Number of peer conflict children stratified by gender, school grade and geographical area and results of Chi-squared test. (categorical scoring). (data from the teachers form of the ECI-IV)

	Cut-off 1	Cut-off 3
Total (1103)	73	29
Male	60	28
Female	13	1
χ^2 (p-value)	29,49 (<.001)	24,21 (<.001)
P3	24	12
P4	26	6
P5	23	11
χ^2 (p-value)	.261 (.878)	2.091 (.351)
Rural	51	17
Urban	22	12
χ^2 (p-value)	1,575 (.209)	.246 (.620)

Table 4
Number of peer conflict children stratified by socioeconomic status and the level of education of the parents and results of Chi-squared test. (data from the parents form of the ECI-IV)

	Cut-off 1	Cut-off 3
Total (851)	57	22
Holligshead low	19	6
middle	31	10
high	7	6
χ^2 (p-value)	1.615 (.446)	0.026 (.451)
Father's secondary education completed	9	19
Not completed	48	3
χ^2 (p-value)	6.497 (.011)	3.134 (.077)
Mother's secondary education completed	17	13
Not completed	40	9
χ^2 (p-value)	1,425 (.233)	.133 (.716)

Table 5
Prevalence and 95% confidence interval of the prevalence of PC by externalizing behavioral disorders

	PC Cut-off 1			PC Cut-off 3		
	N	%	95% c.i.	n	%	95% c.i.
Prevalence in the sample	73	6.62	5.22-8.25	29	2.6	1.77-3.75
ADHD-I (47 children)	6	12.77	4.83-25.74	4	8.51	2.37-20.38
ADHD-HI (28 children)	11	39	21.5-59.42	7	25	10.69-44.87
ADHD-C (19 children)	11	57.9	33.5-79.75	8	42.10	20.25-66.50
ODD (30 children)	21	70	50.6-85.27	15	50	31.30-68.70
CD (23 children)	19	82.61	61.22-95.05	15	65.22	42.73-83.42

3.65) with 28 cases. Of these, 11 are also PC according to cut-off 1 and 7 according to cut-off 3. For the combined subtype or ADHD-C with a prevalence in total sample of 1.72% (c.i.: 1.04 - 2.68) with 19 cases, 11 were also PC according to cut-off 1 and 8 according to cut-off 3. The prevalence of ODD of the sample (N = 1,104) was 2.72% (c.i.: 1.84 - 3.86) with 30 cases. From the 30 children that are ODD; 21 were also PC according to cut-off 1 and 15 according to cut-off-3. The prevalence of CD of the sample (N = 1,104) was 2.18% (c.i.: 1.33 - 3.11) with 23 cases. Of the 23 children that are CD, 19 were also PC according to cut-off 1 and 15 according to cut-off 3 (see table 5).

Discussion

The prevalence of peer aggression among this population of 3 to 6 years olds (2.6%) is low in comparison with the one recently found by Ortega and Monks (2005) in Sevilla, Spain, (12%). But in Sevilla the informants were the teachers and the children themselves and the sample was N = 92 instead of the 1,104 preschoolers from Catalonia.

A large body of research points to the existence of gender differences in overall levels of aggression (Dunn, 2001; Loeber & Hay, 1994; Tapper & Boulton, 2004). Boys were observed to be more aggressive than girls. This association between gender and aggression has been used as an argument for the biological basis of antisocial behavior. But there are social factors that could be involved: male aggression is considered more acceptable than is a girl's aggression (Rubin, Hastings, Chen, Stewart, & McNicho, 1998) and parents are more accepting of their son's aggression than they are of their daughter's (Mills & Rubin, 1990). Our research with preschoolers confirms this gender differences found in empirical studies. In another study in children 3-to-5-year olds, Crick, Casas, and Mosher (1997), also using teacher ratings, found also higher levels among boys compared to girls.

Strong associations with different types of peer aggressions had been found in some studies with preschoolers (Monks, Ortega, & Torrado, 2003, Ortega & Monks, 2005), but gender differences in different types of peer aggression had been carried out until recently only on school-age children (Björkqvist, Lagerpetz, & Kaukianen,1992; Lagerpetz & Björkqvist, 1994). In our population of 3 to 6 year olds, these differences have been taken into account. Peer physical aggression, the most prevalent form of aggression in boys as in girls, is much more frequent in boys. Verbal aggression is also higher in boys at all levels. Aggression through object, a characteristic of the PCS scale, less prevalent than direct physical aggression, is also higher in boys and similar in frequency to direct peer aggression.

Another contribution of the present study is about the age of emergence of gender differences in different types of peer aggression.

Achenbach (1993), Keenan and Shaw (1994), and Richman, Stevenson, and Graham (1982) reported the absence of gender differences in externalizing behaviors from age 1 to 3. Tapper and Boulton (2004) reported significantly higher levels of gender differences in year 6 but no in year 3. According to Lahey, Waldman, and McBurnett (1999), and to Keenan et al. (1997), the emergence of gender peer differences begins at ages 4 and 5 and becomes more striking during the school-age period. Our results show gender differences at age 3, according to the dimensional scoring procedure which is more useful than the categorical one to study in detail gender differences of preschoolers. Of the 370 P3 children of our sample, 211 (57%) were 3-year old when teachers completed the PCS and 159 had recently celebrated their fourth birthday (the answers of the PCS cover the six months before).

The differences between our results and those of several other studies could be due to cultural differences, as the majority of them refer to American samples. Farris (2000) in a study with Chinese preschoolers in Taiwan, pointed out that there is evidence of cross-cultural differences in the childish preference for conflict. She referred to one of the only published reports of Chinese boys and girls in which Kyratzis and Guo (1996) contrasted groups of American and Chinese preschoolers in mixed-sex interactions. They found that boys verbally dominated girls in the American sample, whereas girls dominated boys in the Chinese sample. Kyratsis and Guo attributed this fact to the strong position of the mother in the family in China. Differences could also be explained by changes in the educational style of parents

in recent years. Furthermore, the report methods to assess peer aggression are not the same in all the studies.

Finally we remark the associations of preschool peer aggression with disruptive psychopathology (according to DSM-IV diagnoses). High levels of peer aggressive behavior links to many ADHD-I, oppositional disorder and conduct disorder diagnoses.

Social experiences have emerged as important factors in the development of psychopathology (Khatri et al., 2000). As Asher and Parker (1989) pointed out, peers play an important role in development. Peer aggression could be a predictor of behavioral and emotional adjustment.

It is well established that conduct problem (CP) children have difficulties in the area of peer relations (Katz, 2005). Until recently much of this work has focused on elementary school-age children. Nevertheless, some researchers have reported that conduct problems and peer-relations tend to co-occur in preschool children (Milich, Landau, Kilby, & Whitten, 1982; Olson & Lingfren, 1988). The present study shows similar results in a large sample of preschoolers. Understanding these relationships could be a fruitful area of research in the development of dissocial behaviors.

Children displaying the combined pattern of both high levels of aggressiveness and hyperactive-impulsive-inattentive behavior have markedly greater risk of a variety of psychological, emotional and social difficulties than do children having either behavior pattern alone (Shelton et al., 1998). We have found associations between ADHD subtypes and peer aggression in preschool children. Our results do not allow to affirm that inattentive subtype is comorbid with PC but the other two subtypes are strongly associated to PC. The type more comorbid with PC has been the combined one. We remember that Nolan et al. (2001) had observed that children with C type symptoms had higher social problems severity scores than the I and HI types in teacher reports.

ODD preschoolers are very often peer-conflictive. The association between those two pathologies is very significant. As oppositional disorder is one of the most prevalent externalizing disorders in preschoolers (Nolan et al., 2001), we suggest one should detect the association of those disorders early, and prevent their continuity in the development of abnormal behavior.

Despite the advantages of a large community sample, several limitations need to be noted. The first concerns the sole reliance on a questionnaire to rate conduct behavioral problems. The second is about the use of teachers as exclusive informants. Although teacher's reports are very useful in the assessment of this kind of problems, this fact could increase the likelihood of method bias. However, the large number of teachers involved in this study may neutralize the tendency for a rater to consistently over or under-estimate behavior problems. Teacher ratings may also be influenced by sex-roles stereotypes and this may account for the lower ratings of girl's overt aggression (Tapper & Boulton, 2004). So, the extent of the differences between girls and boys aggressive behavior, provided by teacher`s evaluations should be interpreted cautiously. Therefore, the inclusion of a multimodal strategy, using peer-nominations and observational measures may more accurately assess peer aggression of preschoolers.

Finally we note that the present study is cross-sectional. Future longitudinal research and the assessment of other several factors such as parenting practices, child characteristics and mother and father personalities, as Prinzie et al. (2004) have recently suggested, are necessary to strengthen our previous results and to fix preschool peer aggression a risk factor for the development of psychopathology over time.

Clinical Implications

Preschool can be the first social context outside the home where children learn to interact with anyone other than parents and siblings and to manage peer conflicts. Although preschool peer conflicts serve developmental functions, some children experience special difficulties in conflicts with others. A significant number of toddlers who exhibit problem behavior continue to have these difficulties throughout their school years (Campbell et al., 2000). Understanding the processes that promote continued difficulties versus adequate adjustment is therefore of primary importance and one area of research that may address these processes is the study of early childhood peer problems (Keane & Calkins, 2004).

The present study highlights the high prevalence of aggressive behavior against peers in 3 to 6 year children and would be a contribution to the knowledge of early manifestations of different forms of aggressive behaviors against peers and gender differences in 3 to 6 year olds.

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