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# Pervasive and Non-pervasive Conduct Problems in a Clinic Sample Aged 4–8 years: Child, family and day-care/school factors

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Differences between pervasive (home and day-care/school) versus non-pervasive (home only) conduct problems were examined in regard to various child, parent/family, and day-care/school characteristics in an outpatient clinic sample of 120 children aged 4–8 years. All children scored above the 90th percentile on the Eyberg Child Behavior Inventory for home problems and met the criteria for a possible or a confirmed diagnosis of oppositional defiant behaviours. The proportion of children with pervasive conduct problems was high, 83%. Teachers in day care and school reported children in the pervasive group to have significantly more attention and internalizing problems as well as lower social competence scores than those in the non-pervasive group. Children in the pervasive group also showed consistently more problems in their relationships both with teachers and peers than those in the non-pervasive group. The implications for assessment and treatment of children with conduct problems in these age-groups are discussed.

Keywords: *ODD; Conduct problems; Day-care; School.*

## Introduction

Oppositional defiant disorder (ODD) in pre-school children, and conduct disorder in school-aged children are among the most frequently diagnosed psychiatric disorders in childhood, accounting for about one-third to one-half of all referrals to child and adolescent psychiatric clinics (House, 1999; Kazdin, 1996). The prevalence of ODD in children is reported to range from 0.3 to 22%, with a median of 3.2%, while the prevalence of conduct disorder ranged from 0.0 to 12%, with a median of 2% (Lahey, Miller, Gordon, & Riley, 1999). In Scandinavia,

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prevalence rates of total problem levels as well as externalising problems among school-aged children have been reported to be lower than in other countries (Crijnen, Achenbach, & Verhulst, 1997).

According to DSM-IV guidelines ODD is not diagnosed in the presence of conduct disorder because it is seen as a less severe manifestation of conduct disorder (Rowe, Maughan, Costello, Angold, & 2005), and prevalence rates for ODD therefore in most studies fall with age, while conduct disorder increase in prevalence with age. Maughan, Rowe, Messer, Goodman, and Meltzer (2004) found that this fall in ODD is not determined by any age changes in the frequency of oppositional behaviour. The majority of children with conduct disorder are reported to have significant levels of oppositional behaviour from early childhood to middle adolescence. ODD and conduct disorder show high levels of overlap in that a proportion of children with ODD later develop conduct disorder and both diagnoses show substantial comorbidity with other disorders (Loeber, Burke, Lahey, Winters, & Zera, 2000; Maughan et al., 2004).

Fifty to sixty percent of children referred because of conduct problems at home also exhibit clinically significant problem behaviours in day-care and school settings (Campbell, 2002; Ramsey, Patterson, & Walker, 1990; Reid, Webster-Stratton, & Hammond, 2003). Children with an early onset of serious conduct problems that are manifest in more than one setting are at greater risk of having problems persisting throughout childhood and adolescence than those with conduct problems exhibited in only one setting (Ledingham, 1999). Despite these findings, few studies have focused on cross-setting consistency of conduct problems in children, particularly in preschool children.

According to the theoretical model presented by Moffitt, Avshalom, Harrington, and Milne (2002) persistent conduct problems in a child emerge from inherited or acquired neuropsychological problems manifested as cognitive problems, difficult temperament, or attention/hyperactivity problems, combined with environmental risk factors such as inadequate parenting, disrupted family bonds, and poverty. The environmental risk expands beyond the family as the child gets older and will then include relational problems with persons outside the family as peers and teachers. Although most theories assume that conduct problems originated and shaped in the home also generalise to peer interactions and to other settings—e.g., the school—research indicates that generalisation effects may flow in both directions (Snyder, Cramer, Ahrank, & Patterson, 2005). Early conduct problems in the child may result in a cycle of cumulative events that increasingly affect the psychosocial functioning of the child over time (Reid, Eddy, Fetrow, & Stoolmiller, 1999; Webster-Stratton and Taylor, 2001; Snyder et al., 2005). The risk of a child developing serious conduct problems and poor social adjustment increases with each additional risk factor (Moffitt et al., 2002).

Few consistent findings have emerged in clinic studies addressing differences between children with conduct problems at home and those who have such problems both at home and in day-care/school, i.e., having pervasive problems. Ramsey et al.

(1990) noted that antisocial boys who were extremely deviant in more than one setting also were more deviant in general than those who were deviant in only one setting. Campbell (2002) noted that children exhibiting conduct problems both at home and in pre-school/school had lower social competence than those having problems in only one setting, as reported by parents, teachers, or the children themselves. Webster-Stratton and Hammond (1998) reported that mothers of children aged 3–8 years with pervasive problems used more critical statements and displayed more negative emotions toward their children. They were also more harsh and inconsistent in their discipline than mothers of children with non-pervasive problems. In addition, there was a higher percentage of single mothers of children with pervasive conduct problems. Reid, Webster-Stratton, and Hammond (2003) further reported that children with pervasive problems needed teacher training added to parent or child training to achieve positive outcomes both at home and in school, two years after treatment.

Because of a higher risk of lasting negative development among children exhibiting conduct problems in more than one setting, important differences between such individuals and those with conduct problems in one setting should be further addressed. Such information is important to gather to identify those children at the greatest risk, but also to tailor and optimise interventions for children with pervasive and non-pervasive conduct problems.

The purposes of the present study were to (1) estimate the level of conduct problems in day-care and school in a clinic sample of children aged 4–8 years exhibiting conduct problems at home; (2) investigate child, parenting, family, and day-care/school factors differentiating children with conduct problems only at home (non-pervasive group) from those with conduct problems both at home and in day-care/school (pervasive group); and (3) examine predictors of pervasive conduct problems in day-care/school in multivariate analyses.

## Method

### *Participants*

The subjects in the present study consisted of 127 children, 4–8 years old, referred to two child psychiatric outpatient clinics to be treated for oppositional defiant disorder or conduct disorder. Out of the 127 children, 7 were excluded because of no assessment performed in day care or school, so 120 children participated. The mean Eyberg Child Behavior Inventory (ECBI) total scores for the 7 dropouts were almost identical to those in the total sample, 149.5 versus 150.6 (mothers' report). The study was conducted in two university cities in Norway, Trondheim, and Tromsø. Exclusion criteria were children with gross physical impairment, sensory deprivation, intellectual deficit, or autism. All but one family, in the study were native Norwegians. Child and family characteristics are presented in Table 1.

Table 1. Child and family characteristics of the total sample ( $n=127$ ): Percentages and number of subjects within parenthesis

	% ( $n$ )
Child gender	
Boys	80 (101)
Girls	20 (26)
Age <sup>a</sup>	6.6 (1.3)
Children in day care	31 (39)
Children in school	69 (87)
Child diagnoses	
ODD, possible diagnoses	13 (16)
ODD, confirmed diagnoses	87 (111)
CD, possible diagnoses	11 (14)
CD, confirmed diagnoses	8 (10)
ADHD	35 (45)
Anxiety/depression	10 (13)
Enuresis	14 (18)
Encopresis	7 (9)
Tourette/tics	4 (5)
Living situation	
Both parents <sup>b</sup>	47 (60)
Mother and stepfather	21 (26)
Single mothers	32 (41)
Parent	
Mother education	
College or university	14 (16)
High school or partial college	78 (90)
Partial high school or less	8 (9)
Father education	
College or university	19 (18)
High school or partial college	72 (69)
Partial high school or less	9 (9)

*Note.* CD, conduct disorder; ODD, oppositional defiant disorder. <sup>a</sup> Mean and SD. <sup>b</sup> Including eight adoptive- and foster parents and four parents with shared custody.

### Procedures

Information about the study was given to referral agencies or professionals, such as teachers, physicians, health nurses, and child welfare workers, throughout the project period.

All clinically referred children were first screened by means of ECBI (Robinson, Eyberg, & Ross, 1980) with the 90th percentile as a cut-off score according to Norwegian norms (Bertelsen, Reedtz, & Mørch, 2004). Those who attained this cut-off score were subsequently interviewed by one of three trained interviewers using the KIDDIE-SADS (see details below). Those who received a possible or definitive diagnosis of ODD and/or conduct disorder were offered a chance to participate in the study. The term “possible diagnosis” refers to those children who scored one criterion less than the four required for a formal DSM-IV ODD diagnosis or the three items required for a formal DSM-IV conduct disorder diagnosis, and had

diminished function, a procedure suggested by Angold & Castello (1996) and Rowe et al. (2005).

All clinic children included had severe conduct problems at home as rated by their parents on the ECBI. To assess conduct problems in day care the aggression subscale of the Preschool Behavior Questionnaire (PBQ; Behar, 1977) was used, and for children in school, the aggression subscale of the teacher report form (TRF; Achenbach, 1991) was used. To estimate the optimal cut-off points between our clinic group and Norwegian normative data, Receiver Operating Characteristic (ROC) curve analysis was used. The results of these analyses showed that a value of nine corresponding to the 80th percentile was found to be the optimal cut-off point for the PBQ, and a value of six was the optimal cut-off point for the TRF, corresponding to the 88th percentile.

### *Assessment*

All data in this study are based on assessment of the children before participating in treatment.

The ECBI is a 36-item inventory for parents to assess child conduct problem behaviours among children aged 2–16 years (Boggs, Eyberg, & Reynolds, 1990; Robinson et al., 1980). Scores range from 1–7. In this study only the total intensity scores were used to indicate frequency of conduct problems. Reliability for internal consistency was .82, and test-retest has been reported to be .86 (Webster-Stratton, 1998).

The Child Behaviour Checklist consists of 118 items rated on a 0–2 scale, addressing emotional and conduct problems in children (Achenbach, 1991a). In this study the aggression and attention subscales were used (consisting of 20 and 11 items, respectively), in addition to the internalising syndrome scale (31 items). Test-retest reliability has been found to be high, and inter-parent agreement to range from .65 to .75 for the subscales (Achenbach, 1991a). Internal consistency was .84, .74, and .84, respectively (mothers' report).

Social Competence Scale–Parent measures, developed by the Conduct Problem Prevention Research Group (Webster-Stratton & Hammond, 1998), consists of 12 items rated on a 1–5 scale, addressing parental perceptions of their child's social competence. A total social competence score is computed and internal consistency was found to be high ( $\alpha = .87$ ).

The KIDDIE-SADS is a semi-structured diagnostic interview designed to assess psychopathology in children and adolescents according to DSM-IV criteria (Kaufman, Birmaher, Brent, Flynn, & Morcei, 1997). Here only the diagnoses most relevant for the 4–8 age group were included, being based on parents' reports of current episodes of psychopathology among children. Three trained persons conducted the diagnostic interviews. All interviews were recorded, and random checks showed high inter-rater reliability in that all Kappa scores were above .90.

The Parent Practices Interview was adopted from the Oregon Social Learning Centre's discipline questionnaire and revised for young children (Webster-Stratton,

Reid, & Hammond, 2004). Two summary scores were used here: harsh discipline (14 items, including use of parental force such as verbal or physical aggression); and positive parenting (15 items, including verbal encouragement, praise and reinforcement and use of incentives or privileges). The scores ranged from 1 to 7, and an average summary score was computed. Internal consistency has been found to be .85 and .65, respectively.

The PBQ includes 30 items of conduct problems and is completed by day-care teachers for children aged 4–6 years (Behar, 1977). In this study, the aggression, hyperactive/distractible, and internalization subscales were used. Items were scored on a 0–2 scale. Internal consistency was .80, .63 and .82. In the Behar study (1977) test-retest reliabilities for these subscales were .93, .94, and .60, respectively. We also used the aggression subscale from a Norwegian normative study to estimate an optimal cut-off point between this sample and our clinical group (Clifford & Lurie, 2004).

The TRF consists of teacher ratings of school children's academic performance, four general adaptive characteristics, and 112 conduct problems for children in school (Achenbach, 1991b). In this study, the aggression (25 items) and attention (20 items) subscales, and the internalizing syndrome scale (35 items), with item scores ranging from 0 to 2, were used. Test-retest reliability for the problem scales has been found to be .90; and .55, for inter rater agreement (Achenbach, 1991b)—and internal consistency was .94, .90, and .87, respectively. Again, scores on the aggression subscale from the Norwegian normative study were used to estimate the optimal cut-off point between these data and our clinical group (Clifford and Lurie, 2004).

The Social Competence and Behaviour Evaluation includes 80 items designed for teacher/day-care teachers to assess patterns of social competence, affective expression, and adjustments difficulties in children (LaFreniere & Dumas, 1995). In this study, we used the subscales for social competence (consisting of 40 items) and peer interactions (isolation-integration and egotistic-pro-social, each scale consisting of 10 items). Scores ranged from 0–5, and an average score was computed for each subscale. Test-retest reliabilities are reported to range from .74 to .87 (LaFreniere & Dumas, 1995), and alpha coefficients for internal consistency were .67, .80, and .77, respectively.

The Student Teacher Relationship Scale is a 30-item rating scale with scores ranging from 1 to 5, designed to assess teacher perceptions of their relationships with a particular child (Pianta, 1996). In this study, the conflict (12 items) and the closeness (11 items) subscales, and the total score for overall relational quality (30 items) were used. For each scale an average score was derived. Internal consistency for these scales was .80, .66, and .67, respectively.

### *Statistics*

To identify child, parent, family, and day-care/school categorical variables distinguishing children with pervasive from those with non-pervasive conduct

problems, chi-square tests were used, and for analysis of differences between group means, independent *t*-tests were employed. Effect sizes were estimated with Cohen's criteria (1988) for small effect (1–5.9%), medium effect (5.9–13.8%), and large effect (13.8% or more). Multivariate logistic regression with backward elimination procedures was used to examine the most powerful predictors of pervasive versus nonpervasive conduct problems emerged as significant in bivariate analyses. An alpha level of  $p < .05$  was used to indicate a statistically significant result.

## Results

### *Prevalence of Clinical Levels of Conduct Problems*

Based on the cut-off points on the PBQ and the TRF, 83% ( $n=100$ ) of the children in the present clinic sample showed conduct problems both at home and in day-care/school, i.e., having pervasive problems, and 17% of the children ( $n=20$ ) had conduct problems only in the home. Seventy-seven percent ( $n=30$ ) of the children in day-care, and 87% ( $n=71$ ) of those in school showed pervasive problems.

### *Child, Family, Parenting, and School Characteristics among Children with Pervasive or Non-pervasive Conduct Problems*

The results of analyses of child factors including gender, age-group, psychiatric diagnosis and symptoms, and social competence in the child, showed that none of these factors differed between children in the non-pervasive and pervasive groups, as reported by parents. However, teachers rated children in the pervasive group as having significantly lower social competence scores and significantly higher levels of both internalising and attention problems as compared with those in the non-pervasive group (see Table 2).

Further analyses of various family factors showed that living situation (single parent, living with both parents, or living with one parent and one step-parent) and education level of parents did not differ significantly between the non-pervasive and pervasive groups. For parenting factors, only father's harsh parenting differed significantly between the two groups. However, contrary to expectation, the highest level was found for fathers of children in the non-pervasive group (see Table 2).

Additional analyses of day-care/school-related factors (peer-interactions, student-teacher relationship), showed that children in the pervasive group had significantly more overall negative student-teacher relationships, and higher conflict levels in these relationships, than those in the non-pervasive group. Closeness in student-teacher relationship did not differ between the two groups. Children in the pervasive group also showed significantly more problems in their peer interactions than those in the non-pervasive group, in that children in the pervasive group were rated by their teachers as being both more egoistic and isolated in their peer interactions (see Table 2).

Table 2. Significant differences in characteristics between children with pervasive and non-pervasive conduct problems

	Pervasive group ( <i>n</i> =100)		Non-pervasive group ( <i>n</i> =20)		<i>t</i>	ES
	Mean	(SD)	<i>M</i>	(SD)		
Attention problems in day-care/school (PBQ/TRF)	2.9	(1.6)	1.3	(1.4)	-4.18**	.13
Internalising problems in day-care/school (PBQ/TRF)	1.8	(1.8)	0.6	(1.4)	-2.81**	.06
Harsh discipline, fathers' report (PPI)	2.2	(0.5)	2.6	(0.7)	2.04*	.05
Peer-interaction						
Egoistic-prosocial	21.4	(6.4)	31.5	(4.2)	6.61**	.28
Isolated-integrated (SCBE)	29.6	(8.3)	34.7	(8.1)	2.47*	.05
Student-teacher relationship (STRS)						
Total-score	94.3	(11.1)	107.3	(8.7)	4.66**	.18
Conflict-score	38.9	(9.0)	27.2	(5.8)	-5.34**	.21

Note. \* $p < .05$ ; \*\* $p < .01$ ; ES, effect size; PBQ, Preschool Behaviour Questionnaire; TRF, Teacher Report Form; PPI, Parent Practices Interview; STRS, Student Teacher Relationship Scale (negative items are recoded in the total score, a high score indicates a positive relationship); SCBE, Social Competence and Behaviour Evaluation.

Effect sizes are presented in Table 2 and show that the highest effective sizes (ES) were found for egoism in peer interactions (ES=28.2%), conflict in student-teacher relationships (ES=20.9%), and overall quality of student-teacher relationships (ES=17.6%).

### Predictors of Pervasive Conduct Problems

In bivariate analyses attention and internalising problems, social competence, egoism and isolation in peer interactions, conflict, and overall quality in student-teacher relationship were found to be significantly associated with aggression level in day-care/school. The results of logistic regression analyses showed that a model,

Table 3. Significant predictors of pervasive versus non-pervasive conduct problems

	B	(SE)	95% CI for exp. B		
			Lower	Exp. B	Upper
Social competence (SCBE)	.09*	(.04)	1.02	1.09	1.18
Egoistic-pro-social (SCBE)	-.55**	(.17)	.41	.58	.81

Note. \* $p < .05$ , \*\* $p < .01$ ; SCBE, Social Competence and Behaviour Evaluation.

including social competence and egoism in peer interactions, significantly predicted group membership, i.e., having pervasive or non-pervasive conduct problems (for social competence:  $B=.09$ ,  $SE=0.4$ ,  $\text{Exp}(B)=1.09$ ,  $p<.05$ ; for egoism in peer-relations:  $B= -.55$ ,  $SE=.17$ ,  $\text{Exp}(B)=.58$ ,  $p<.01$ ). Nagelkerke's  $R^2$  was 64.5%, and overall the model classified 92% of the subjects correctly (69% of the subjects in the non-pervasive group and 96% of the subjects in the pervasive group).

## Discussion

In the present study, differences between children exhibiting conduct problems only at home (non-pervasive problems) and those having conduct problems both at home and in day-care/school (pervasive problems) were examined in a clinic sample of children aged 4–8 years, referred to treatment because of ODD or conduct disorder.

The present clinic sample of children was characterised as having a high prevalence of pervasive conduct problems. In similar treatment studies of young children, the proportion of children with pervasive problems had been reported to be 50–60% (Campbell, 2002; Ramsey et al., 1990; Reid & Webster-Stratton, 2001; Webster-Stratton & Reid, 2003). In the present study, this proportion was found to be substantially higher, 83%. The discrepancies are likely to be due to differences in the use of screening and referral procedures and populations, in addition to differences in definitions of pervasive problem levels.

No difference between children in the non-pervasive and those in the pervasive groups was found in the present study in regard to parental perception of psychiatric symptoms or diagnoses in their children. In this study all children exhibited ODD diagnoses, and about 20% of them also had a conduct disorder diagnoses. The prevalence of conduct disorder or other diagnoses (e.g., ADHD) did not differ significantly among children with pervasive and non-pervasive conduct problems, indicating children with ODD both with and without other related diagnoses are at risk for showing conduct problems in more settings. Because conduct disorder indicates more serious behaviour problems than ODD (Rowe et al., 2005) one should suppose that young children with conduct disorder diagnosis also have higher levels of aggression problems in day-care/school. Our results show such a tendency, although not significant. This may be because of the low number of children with conduct disorder diagnosis, making it difficult to exhibit significant group differences. Children in the pervasive group had lower social competence scores and higher levels of attention and internalizing problems than those in the non-pervasive group as reported by their teachers. These findings are in line with outcomes of other studies addressing characteristics in children with conduct problems in school (Campbell, 2002; House, 1999; Kavale, Forness, & Walker, 1999; Ogden, 2001).

Contrary to the theoretical model of development of conduct problems in more settings and to findings of the studies by Webster-Stratton and Hammond (1998) and Reid et al. (2003), we did not find expected differences between children in the

pervasive and non-pervasive groups in regard to family or most parenting factors. In our sample conduct problems in day-care and school children cannot be explained by differences between parental child-rearing practices at home, parental educational level, or marital status. This statement is supported by the unexpected finding of fathers in the non-pervasive group being harsher in parenting than fathers in the pervasive group. Neither single-parent status nor negative parenting is in this study associated with conduct problems in more settings. A possible explanation is that children and their families referred for treatment because of primarily oppositional-defiant problems in Norway constitute a more homogenous group than those included in treatment studies in other countries.

In the present study, teacher ratings of their relationships with the students in the pervasive group were characterised by higher levels of conflicts and lower scores on overall quality than those in the non-pervasive group. Negative relationships potentially erode the value of the student-teacher relationship as a developmental resource. In negative relations, the teacher more often attempts to control the child's negative behaviour, rather than trying to support its pro-social behaviour (Pianta, Stuhlman, & Hamre, 2002). Hamre & Pianta (2001) reported that a negative teacher-student relationship was more predictive of outcomes for children with problem behaviour than teachers' views of the child's behaviour problem or assessment of cognitive ability. For children in our pervasive group, teachers' experiences of the quality of relationship with the child suggest that this aspect constitutes a greater risk factor for lasting child-conduct problems than levels of aggressive behaviour.

Another important issue is the increased risk for the aggressive child to be rejected by the peers (Coie, Lochman, Terry, & Hyman, 1992) and pro-social behaviour in the child is a key factor in gaining peer acceptance (Hay, Payne, & Chadwick, 2004). Overall, children in the pervasive group were found to be more aggressive, less pro-social, and more isolated in their peer relations than those in the non-pervasive group. Hughes, Cavell, & Willson (2001) reported important connections between child-teacher relationships and child-peer interactions. Those children who had more supportive relationships and fewer conflicts with teachers were more accepted by their peers. Increased praise or positive attention from teachers toward specific children seems to result in more positive peer preferences and perceptions (White & Kistner, 1992). This may indicate that interventions targeting teacher-child relationships are needed for children with pervasive conduct problems. Improved quality of teacher-child relationship is likely to increase positive responses both from the teacher and peers but also to reduce the child's aggression in settings outside the home. Each of these important aspects will reduce the risk of a further negative development for the child with conduct problems.

The most powerful predictors of pervasive conduct problems were found to be low social-competence scores and egoism in peer interactions as rated by the teachers. When effect sizes were studied, egoism in peer interactions, overall quality and conflict of student-teacher relationship were found to have high effect sizes. These

findings underline the significance of social problems in children with high aggression levels in day care and school.

A limitation of this study was the inclusion of a highly selective clinical sample of children with defined oppositional or conduct disorders recruited for a controlled treatment study because of serious conduct problems at home. The recruitment procedures likely contributed to the high levels of children with pervasive problems. Moreover, the small number of children in the non-pervasive group limited the statistical power in the statistical analyses and the likelihood of obtaining significant differences between the two groups. Although day-care and school problems among children were assessed only by means of questionnaires, optimal cut-off scores were computed in comparisons with normative data.

One implication of the present study is that the broader spectrum of problems in children with pervasive conduct problems has to be targeted both in assessment and interventions offered to the child. Further, our study indicates that teacher-reported aggression among young children occurs together with both peer- and teacher-interaction problems. This should have implications for support and interventions offered young children with conduct problems in day care and school. These children need high-quality relationships with their teachers, and they need support regarding their social interactions with peers in the paedagogical settings. Our findings indicate that for children with pervasive conduct problems, intervention may be needed in more settings, both at home and in day-care/school, and according to different types of emotional, behavioural, and social problems in the child.

Further research is needed to investigate differences in characteristics between children with pervasive and non-pervasive conduct problems in larger clinical and community samples.

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