

Associations between high levels of conduct problems and co-occurring problems among the youngest boys and girls in schools: A cross-sectional study

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Background: Few studies have focused on conduct problems and co-occurring problems among the youngest children in schools, such as social, internalizing and attention problems. In particular, there is a lack of studies that differentiate between boys and girls in terms of such problems. *Aim:* The aim of the current study was to test associations between conduct problems and social, internalizing and attention problems, as well as adaptive school functioning, which was rated by the teachers of boys and girls in grades 1–3. *Methods:* In a cross-sectional study, 103 boys and 108 girls in grades 1–3 at six schools participated in a national Norwegian study of child conduct problems in the normal population. Linear regression analysis was used to test the associations between conduct problems, social skills, problems of internalization, attention problems and adaptation to school among boys and girls. *Results:* There were significant associations between high levels of conduct problems and social skills problems, attention problems and low adaptive school functioning scores among boys and girls. Attention problems had the most powerful associations with conduct problems for both genders. *Conclusions:* Young schoolchildren with high levels of conduct problems also had co-occurring problems. Schools and teachers need to adopt a comprehensive approach to help these children during their first years in school.

• *Behaviour problems, Norwegian sample, Sutter–Eyberg School Behavior Inventory-Revised (SESBI-R), Teacher report, Young schoolchildren.*

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Conduct problems are very common among young children (1). The development of conduct problems follows two main courses, i.e. one that starts at preschool ages and one that starts during adolescence (2). A growing body of evidence suggests that early-onset conduct problems may be quite persistent and that they are associated with an enhanced risk of impaired functioning such as criminal involvement, drug abuse, dropping out of school and violent behaviour later in life (3–5). The complex relationships among a child's individual characteristics, his/her family and the surrounding environment (such as school and day care units) may affect each other and lead to conduct problems outside the normal range (6). From preschool until mid-adolescence, boys display more aggressive and non-aggressive antisocial behaviours

than girls (1). However, the long-term effects of early and persistent conduct problems are equally negative for girls and boys (5).

Conduct problems are frequent in schools and they cover anything from ordinary teaching problems with normal pupils to severe uninhibited behaviour (7). Teachers identify children as having conduct problems when they refuse to co-operate, fail to follow teacher instructions or the rules of the school/classroom, fight, have peer problems, behave cruelly or disrupt others (8). Teachers may find that children with conduct problems represent serious challenges to their work (9), and they usually rate boys as having higher levels of conduct problems compared with girls (10, 11). However, there is less knowledge of conduct problems with girls than boys.

In recent decades, problems with the conduct of schoolchildren seem to have increased and this presents a great challenge for schools (12, 13). Between 5% and 10% of all children and young people aged 4–16 have school conduct problems in Western countries (14, 15).

Children with conduct problems frequently have co-occurring problems. Several studies have indicated a systematic association between conduct problems and a lack of social competence (16, 17). Children with conduct problems tend to be rejected by prosocial children (17) and they are likely to associate with other children with similar problems, who find their behaviour acceptable. Over time, this will contribute to an increase in their conduct problems (17). Furthermore, children with conduct problems often have learning difficulties (18). Children with higher levels of conduct problems are considered less academically competent (19), they perform worse in schools (20), they possess inferior reading and verbal skills (21), and they receive more negative feedback from teachers than their more behaviourally competent peers (22).

Furthermore, a combination of conduct and internalization problems is associated with a range of serious problems during adulthood, such as psychiatric disorders and criminal offending. Among others, internalizing problems such as depression may be triggers of child aggressive behaviours and they need to be dealt with in schools (23). The opposite may also be the case and internalizing problems can lead to behavioural problems (5). Sourander et al. (24) found that children with high levels of co-occurring conduct problems and internalization problems were at high risk of developing negative psychosocial outcomes during adolescence and early adulthood.

Attention deficit hyperactivity disorder (ADHD) in children may be a risk factor for the early onset of conduct problems (25). The overlap of conduct problems with ADHD is as strong as 30–50% (1, 26). Children with ADHD symptoms are known to have low levels of feelings of competence (1, 27, 28). These children are at particular risk of later social problems and they require a great deal of support in schools (29). The combination of conduct problems and ADHD symptoms increases the risk of continued difficulties throughout childhood and into adulthood (30).

However, good adaptive functioning of children in schools may protect them from conduct problems. Children who adapt well to school and who like school have lower levels of conduct problems (31). Girls have higher levels of adaptive functioning compared with boys, which may be related to the lower frequency of their conduct problems (32).

Few studies have focused on the correlations between problems with conduct and co-occurring problems among the youngest children in schools, particularly whether differences exist between boys and girls. It is important

to pay special attention to these problems at an early stage because this may help to identify appropriate behavioural interventions for boys and girls during their first years at school. Therefore, the aim of the current study was to test for associations between conduct problems and social, internalizing and attention problems, as well as adaptive school functioning, which was rated by the teachers of boys and girls in grades 1–3. Based on previous studies, we hypothesized that there would be more co-occurring problems among boys than girls, because boys have higher levels of conduct problems than girls.

Methods

Participants

The study was conducted with 211 schoolchildren who were participants in a national Norwegian study on child conduct problems in the normal population. Invitations to participate were sent to 28 schools in 18 different municipalities. Six schools from three different municipalities agreed to participate. The schoolchildren were invited to participate as follows. Seven children were randomly selected by each contact teacher and invited to participate. If a child's parents did not accept the invitation to participate, a new child was selected at random until seven participating children were selected by each contact teacher. The children who participated in the study were in school grades 1–3 in different parts of Norway. Thirty-four of 35 grade 1–3 teachers participated, which yielded a response rate of 97% (Fig. 1). A total of 211 children participated, yielding a response rate of 86%, i.e. 103 boys and 108 girls (Fig. 1). Children were excluded if their parents did not speak or understand Norwegian, which prevented them from reading and responding to the consent form.

Procedures

The principal of each school distributed information about the study and all other necessary material to the teachers. Teachers then distributed this information to parents with a request for permission for children to participate in the study. There was an option of withdrawing a child from the study at any time, after informing the teacher. The questionnaires either were returned to the research group in a prepaid envelope or they were completed using the Internet survey tool QuestBack (33).

Brief demographic questions included each child's age, gender, ethnicity, whether the child had special educational needs, the teacher's responsibility for the child, how well the teacher knew the child and how many hours a week the teacher spent with the child. Information on pupil gender, grade, grade cohort, teacher's acquaintance with the pupil, how well the teacher knew the pupil and pupil ethnicity is presented in Table 1. A

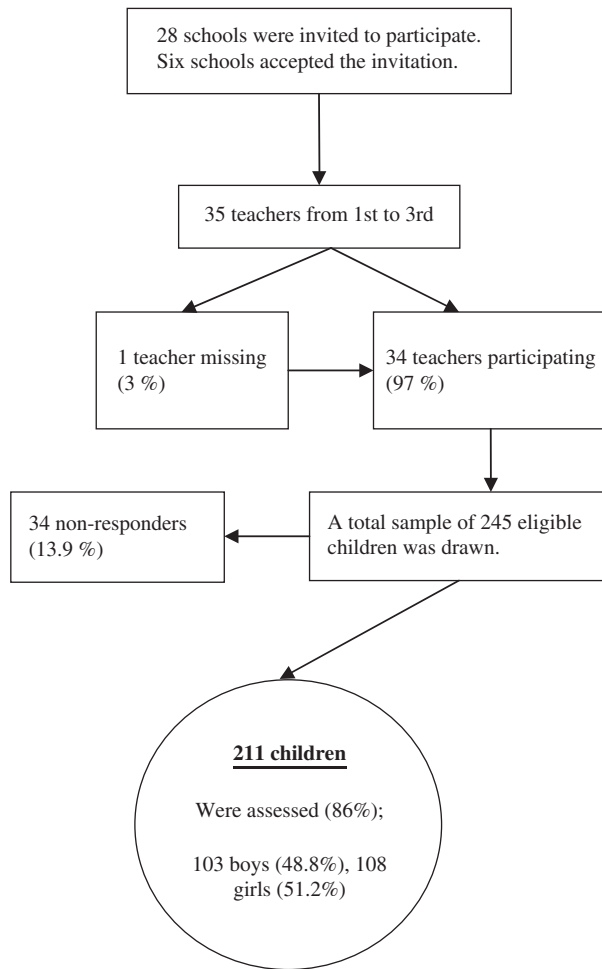


Fig. 1. Flowchart of participants.

list of randomly selected reserve children was given to each school, in case some of the originally selected children were refused permission to participate. Teachers could send one reminder to obtain parental consent.

Measures

THE SUTTER-EYBERG STUDENT BEHAVIOR INVENTORY-REVISED (SESBI-R)

The SESBI-R is a 38-item inventory used by teachers to evaluate the intensity of various behaviours in children aged 2–16 years, which is based on the following seven-point Intensity scale (34): 1 = never, 2–3 = seldom, 4 = sometimes, 5–6 = often and 7 = always. These items related to common behavioural problems that may be observed by teachers. The teacher also scored whether different behaviours were currently a problem on a yes–no scale (0–1), i.e. the Problem scale. A total score was computed for the Intensity and Problem scales, where the range in scores was 38–266 on the Intensity scale and 0–38 on the Problem scale. A study using the SESBI-R with a Norwegian sample of 3- to 8-year-old children

found that the SESBI-R showed good internal consistency ($\alpha > 0.96$) with both SESBI-R Intensity and Problem scales (10).

Thus, SESBI-R is a reliable assessment tool that can be used in a Norwegian sample of boys and girls in age groups of 3–5 and 6–8 years for the efficient behavioural screening of children with conduct problems (10). The present study only used total scores on the Intensity scale to indicate the frequency of conduct problems, which included items such as: “has temper tantrums”, “pouts”, “acts defiant when told to do something”, “has difficulty staying on task”, “has trouble paying attention” and “fails to finish tasks or projects” (10).

The SESBI-R Intensity scale used in this study had an internal consistency of 0.97.

TEACHER REPORT FORM (TRF)

The TRF contained teacher ratings of a child’s academic performance, adaptive characteristics and conduct problems (35). This study used subscales for anxious/depressed (15 items) and attention problems (26 items). Teachers were asked to rate the degree of emotional and behavioural problems in a child during the previous 2 months on a 0–2 scale (0 = not true as far as you know; 1 = somewhat or sometimes true; 2 = very true or often true). The range of scores was 0–30 (anxious/depressed) and 0–52 (attention). We also scored subscales for total adaptive functioning. Teachers were also asked to rate the child in terms of the following four adaptive characteristics using a 1–7 scale (1 = far below average to 7 = far above average): how hard the student was working, how appropriately he/she was behaving, how much he/she was learning and how happy he/she was. These scores were summed to produce a total adaptive functioning score with a range 4–28.

In the current study, the alpha coefficients for the subscales anxious/depressed and attention problems were 0.82 and 0.94, respectively. The alpha coefficient was 0.71 for adaptive functioning.

SOCIAL SKILLS RATING SYSTEM (SSRS)

The SSRS is used by teachers to rate the occurrence and importance of specific social skills, behavioural problems and academic competence (36). The SSRS contains 57 items and it provides a broad assessment of a pupil’s social behaviour. We utilized the social skills subscale, which contains 30 items. The teacher assessed the frequency of each social skill using a 0–3 scale: 0 = never, 1 = sometimes, 2 = often, 3 = very often. The importance of each social skill was assessed using a 0–2 scale: 0 = not important, 1 = important, 2 = critical. The range of the sum of scores was 0–90 and 0–60, respectively. The internal consistency of the SSRS was 0.93 in this study.

Table 1. Demographic characteristics of the final sample, $n = 211$.

	Girls	Boys	Total
Sex distribution in each grade cohort:	108 (51.2%)	103 (48.8%)	211 (100%)
1st grade	28 (27.2%)	30 (27.7%)	58 (27.5%)
2nd grade	38 (36.9%)	36 (33.3%)	74 (35%)
3rd grade	37 (35.9%)	42 (39%)	79 (37.5%)
Size of grade cohort (number of students)			
1–20	69 (54.8%)	57 (45.2%)	126 (59.7%)
1–40	33 (42.3%)	45 (57.7%)	78 (37%)
Above 40	1 (14.3%)	6 (85.7%)	7 (3.3%)
Teacher acquaintance with student (in months)			
1–12	43 (44.8%)	53 (55.2%)	96 (45.5%)
13–24	46 (53.5%)	40 (46.5%)	86 (40.8%)
25–36	14 (48.3%)	15 (51.7%)	29 (13.7%)
How well does teacher know student			
Very good	22 (10.4%)	21 (10%)	43 (20.4%)
Good	71 (33.6%)	73 (34.6%)	144 (68.2%)
Not so good	10 (4.7%)	14 (6.7%)	24 (11.4%)
Ethnicity			
Norwegian	102 (48.3%)	103 (48.7%)	205 (97%)
Non-Norwegian	1 (0.5%)	5 (2.5%)	6 (3%)

Ethics

The study was approved by the Regional Committee for Medical Research Ethics at the University of Tromsø (UiT).

Statistics

The Internet survey tool QuestBack was mainly used by teachers to collect student data. The requirement to respond to all questions in every questionnaire was set as Mandatory, which is an auxiliary function in the QuestBack program.

Descriptive statistics (means and standard deviations) were calculated for the total scores for the dependent variable and the independent variables (Table 2). Multilevel analysis (MLA) was conducted with random intercepts. However, the levels “teacher” and “school” had no significant nested effect. The MLA and the multiple linear regressions had the same results. This indicated that the MLA model did not have a better fit with the data. Thus, the results of the standard multiple regressions are reported.

Linear regression analyses were carried out using the SESBI-R Intensity scale as the dependent variable while the independent variables were social skills, internalizing problems, attention problems and adaptive school functioning. First, we carried out separate linear regression analyses using each variable, i.e. social skills, internalizing problems, attention problems and adaptive school functioning, including gender and interaction with gender as covariates. The p -values for the interaction terms were 0.016, 0.768, 0.035 and 0.007, respectively. There were significant interaction terms, so the remaining analyses were performed separately for girls and boys. All analyses were adjusted for grade as a categorical covariate. Analyses were conducted with adjustments only for grade, as well as multiple adjustment analyses that included all four independent variables. All tests were two-tailed and $p < 0.05$ was considered statistically significant. Analyses were performed using PASW 17 (SPSS).

Table 2. Descriptive statistics of the final sample, $n = 211$.

Variable	Boys	Girls	Total
	Mean (s)	Mean (s)	Mean (s)
Conduct problems	90.56 (34.72)	66.52 (24.42)	78.26 (32.17)
Social skills	47.34 (12.65)	53.67 (12.29)	50.58 (12.84)
Internalizing problems	1.82 (2.81)	1.32 (2.29)	1.56 (2.57)
Attention problems	8.04 (9.06)	3.00 (4.97)	5.46 (7.67)
Adaptive school functioning	12.18 (2.20)	13.57 (2.08)	12.90 (2.25)

s, standard deviation.

Table 3. Simple linear regression analysis for child conduct problems (one variable at a time), $n = 211$.

Variable	Boys			Girls		
	Coefficient <i>B</i>	95% CI	Standardized β	Coefficient <i>B</i>	95% CI	Standardized β
Social skills	-1.361	-1.822 to -0.899	-0.496**	-0.794	-1.155 to -0.434	-0.400**
Internalizing problems	1.565	-0.756 to 3.887	0.127	1.290	-0.869 to 3.450	0.121
Attention problems	2.875	2.398 to 3.351	0.751**	3.913	3.315 to 4.510	0.797**
Adaptive school functioning	-9.222	-11.660 to -6.784	-0.572**	-4.852	-6.925 to -2.779	-0.414**

* $p < 0.05$; ** $p < 0.01$.

Results

Simple linear regression

The results of the simple linear regression analyses for boys showed that high levels of social and attention problems, and low levels of adaptive school functioning were significantly correlated with high levels of child conduct problems (Table 3).

The results for girls also showed that high levels of social and attention problems, and low levels of adaptive school functioning were significantly correlated with high levels of child conduct problems (Table 3). The effects were significantly different for boys and girls (significant interactions with gender) in terms of social skills ($p < 0.01$) and attention problems ($p < 0.05$).

Multiple linear regressions

Multiple linear regression analyses were performed to identify the variables with the strongest associations with the SESBI-R Intensity score. All independent variables were included in the model (grade cohort, social skills, internalizing problems, attention problems and adaptive school functioning). The multiple linear regression analyses for boys showed that attention problems were significantly associated with conduct problems, after controlling for grade cohort, social skills, internalizing problems and adaptive school functioning. The total variance explained by the model was 65.5% ($p < 0.001$). For girls, the multiple linear regression analyses also showed that attention problems were significantly associated with child conduct problems after controlling for grade cohort, social skills, internalizing problems and adaptive school functioning (Table 4). The total variance explained by the model was 63.3% ($p < 0.001$).

Discussion

In this cross-sectional study, we analysed teachers' evaluations of the associations between high levels of conduct problems and social, internalizing, and attention problems, and adaptive school functioning in boys and girls separately in grades 1–3. Conduct problems were rated by teachers using a comprehensive scale (SESBI-R) with a sample of 211 Norwegian schoolchildren aged 6–8 years in grades 1–3. Our main finding was that young schoolchildren with more conduct problems often had higher levels of attention problems. This finding related to boys and girls in grades 1–3 after controlling for age. Thus, our hypothesis that there would be a stronger correlation with problems in boys than girls was not confirmed.

Our bivariate results demonstrated that higher levels of conduct problems in boys and girls were significantly associated with higher levels of problems with social skills and attention, and with lower levels of adaptive school functioning. This indicates that most young children with conduct problems in school also had social functioning difficulties with their peers, attention difficulties and problems adapting to school. As early as grades 1–3, children with higher levels of conduct problems were not content with school and they adapted to school more poorly than their peers. This may have serious consequences for the future success of these children in school, which means it is important for teachers to help these pupils adapt well to school from grade 1. Our findings indicate that there is a need for a more comprehensive approach to the evaluation and prevention of child conduct problems in school settings. However, there was no association between teacher conduct ratings

Table 4. Multiple regression analysis for child conduct problems (all variables), $n = 211$.

Variable	Boys			Girls		
	Coefficient <i>B</i>	95% CI	Standardized β	Coefficient <i>B</i>	95% CI	Standardized β
Social skills	-0.211	-0.701 to .278	-0.077	-0.239	-0.534 to .055	-0.121
Internalizing problems	-0.258	-1.791 to 1.274	-0.021	-0.274	-1.655 to 1.107	-0.026
Attention problems	2.459	1.812 to 3.106	0.642**	3.807	3.098 to 4.516	0.775**
Adaptive school functioning	-1.651	-4.877 to 1.574	-0.102	-0.482	-1.364 to 2.327	-0.041

* $p < 0.05$; ** $p < 0$.

and internalizing problems. This may be because children struggling with subjective problems such as depression and/or anxiety did not cause problems for their teachers, their classmates or in the general environment, so they were not perceived as demanding or troublesome (37). Thus, teachers may not have been aware of their problems.

Multiple regression analyses found that the strongest co-occurring association in our sample was between high levels of conduct and attention problems in both genders, after controlling for age. This finding agreed with the strong correlation between conduct problems and ADHD in children (1, 26). Young schoolchildren with high levels of conduct problems and simultaneous attention problems are likely to be perceived by teachers as more difficult to deal with than other children. Previous studies have shown that co-occurring problems are also associated with a higher risk of negative developments in the longer term (38), indicating the importance of addressing the whole spectrum of child problems as early as grade 1. These problems may have consequences for the efficient screening of child problems and in determining the appropriate intervention approach. Schools need to focus on how to intervene and improve the attention problems and conduct of young children. Strategies directed solely at addressing conduct problems will probably not be sufficient to help children. It may also be necessary to evaluate and treat some of these children for ADHD, and medication may be helpful in some cases (39). Dimensions beyond conduct problems also need to be taken into consideration.

Young children who exhibit conduct and attention problems in school are at risk of developing negative relationships with their teachers (40). Negative student-teacher relationships with high levels of conflict might exacerbate a child's conduct problems. Thus, it is very important to support the development of positive relationships between these children and their teachers. Students who feel supported by their teachers are more positively motivated to engage in schoolwork (41, 42). Children with conduct problems are also at greater risk of dropping out of school (5) and this may be because they struggle with school adaptation during their early school years. Helping young children to adapt to school, manage their academic challenges and promote their well-being in school from grade 1 may reduce the risk of later conduct problems, dropping out of school and reduce the risk of impaired functioning later in life.

Our sample was fairly large, but a limitation of the study was that the sample may not have been representative of Norwegian schoolchildren. Only six of 28 schools were willing to participate in the study. The participation of schools was voluntary, which might restrict the generalizability of our findings to the general population and so they need to be interpreted with care. Another limitation

was that we had only one informant for each child, which might have led to an informant bias. Several informants may have given more nuanced findings. A third limitation was a lack of information about non-responding participants. It is possible that some children with non-responding parents were experiencing problems, which would have raised the scores in both genders. The strengths of the study were the fairly high response rates (97% and 86%) from teachers and children, respectively and the fact that few other studies have focused on differences in the conduct problems of young boys and girls at school, which increases our knowledge for this age group. Our study indicated that this subject should be followed up using a larger and more representative sample. In future research, this study should be replicated with a more representative sample, which should be supported with evaluations of the effect of interventions. This approach would facilitate an increased focus on compound problems in young schoolchildren.

One implication of the current study may be that schools should increase their focus on conduct and co-occurring problems in young children. This could be addressed by implementing intervention programmes that focus on strengthening the teacher's classroom management strategies. Training teachers in effective classroom management and in strategies that promote the social emotional competence of children may be beneficial for teacher practices and reduce child conduct problems, thereby promoting the social and emotional competence of children and their school readiness skills (43–45).

Conclusion

Young schoolchildren with higher levels of conduct problems may also have attention, social and adaptation problems in school. In the current study, the strongest association was between conduct problems and attention problems. These findings were similar in boys and girls. Schools and teachers need to adopt a comprehensive approach to help prevent child conduct problems and co-occurring problems. The implementation of intervention programmes to promote social competence, emotional competence and school readiness skills, and to prevent conduct problems in ordinary classrooms generally gives good results.

Declaration of interest: We hereby confirm that the manuscript has been submitted solely to The Nordic Journal of Psychiatry and that it is not in press, and has not been published or submitted elsewhere. We also confirm that all the research meets the ethical guidelines, including adherence to the legal requirements of our country. We do not have any competing interests. We confirm that we have seen, read and understood the guidelines on copyright and that no material submitted as part of this manuscript infringes existing copyrights. We confirm that all

authors have read the manuscript and agree to its content. We confirm that the names of all co-authors have been included in the manuscript and that all co-authors had an active part in the final manuscript.

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