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SHORT REPORT

Reducing disruptive behaviours and improving learning climates with class-wide positive behaviour support in middle schools

Vesa Närhi^{a,b}*, Tiina Kiiski^b, Satu Peitso^b and Hannu Savolainen^c

^aPhilosophical Faculty, University of Eastern Finland, Joensuu, Finland; ^bNiilo Mäki Institute, University of Jyväskylä, Jyväskylä, Finland; ^cFaculty of Education, University of Jyväskylä, Jyväskylä, Finland

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Disruptive behaviours in classrooms pose a significant challenge for learning in schools and are, at the same time, a risk factor for students' academic achievement and a major source for work-related stress among teachers. Earlier research suggests that clarifying the classroom rules and behavioural expectations, monitoring students' adherence to them and using behaviour-specific praise are simple and effective practices to reduce disruptive behaviour. Most of the interventions have been developed for elementary schools, although behaviour problems tend to be more common in middle schools. This two-month pilot study using a prepost design evaluated the effects of a class-wide intervention on learning climate and disruptive behaviour (evaluated by students and teachers); on teacherexperienced stress; and on the time needed to maintain the positive learning climate in middle school. The classes were nominated for the intervention by their teachers on the basis of poor learning climates. The intervention was based on clear behavioural expectations for the students, positive behaviour support and, if needed, rapid actions in response to high rates of disruptive behaviour. The intervention was carried out by teachers, supported by monthly counselling meetings. The results indicated a large reduction in disruptive behaviour, in the time needed to maintain positive learning climate and in strain experienced by teachers while teaching the classes. The intervention was highly accepted by teachers, principals and (although to lesser degree) students. Although the lack of a control group in the design limits conclusions regarding the amount of change attributable to the intervention, the results suggest that an easily applicable and trainable intervention, which requires very little external support, may produce significant improvements in learning climates in middle schools.

Keywords: universal prevention; consultation; disruptive behaviours; middle school; class-wide intervention

Disruptive behaviour in a school classroom can have many negative impacts for both teachers and students. Problem behaviours are clear risks for students' academic achievement while at school (e.g. Frick et al. 1991; Wagner et al. 2005), especially when coinciding with problems in learning difficulties (Algozzine, Wang, and Violette 2011) and for post-school adjustment (e.g. Schaeffer et al. 2006; Karakus et al. 2012). Disruptive behaviour also hampers the learning of the wellbehaving students and is a cause for teachers' stress (Boyle et al. 1995; Klassen and

^{*}Corresponding author. Email: vesa.narhi@nmi.fi

Chiu 2010). Most of the discipline problems are mild and occur during lessons (Skiba, Peterson, and Williams 1997), and behaviour problems tend to be more common in middle than in elementary schools (Kaufman et al. 2009). According to Finnish data, there is also substantial variability in learning climates between classrooms (Holopainen et al. 2009). The variability indicates that in some classes, the classroom management has been successful, while in others, high levels of disruptive behaviour disturb possibilities for learning.

Classroom management can be defined as the actions teachers take to create environments that support both academic and social/emotional learning (Evertson and Weinstein 2013). There are recent efforts to synthesise the findings of experimental studies on classroom management. Oliver, Wehby, and Reschly (2011), in their meta-analysis on group studies of class-wide interventions, concluded that teachers' systematic classroom management practices reduce teacher-evaluated problem behaviours in a classroom. The authors were not able to identify the most effective components of classroom management programs, since the studies did not allow more detailed analysis. Simonsen et al. (2008), in their systematic review, identified five categories of evidence-based practices in classroom management: maximising structure and predictability; providing clear behavioural expectations and feedback on these expectations; actively engaging students; acknowledging appropriate behaviour; and responding to inappropriate behaviour. Epstein et al. (2008) also developed five recommendations, of which, three were at the classroom level: identifying the antecedents and consequences of problem behaviour and tailoring interventions based on the observations; modifying the classroom environment (e.g. by revisiting and reinforcing behavioural expectations); and teaching and reinforcing appropriate behaviour and preserving a positive classroom climate. The conclusions of Simonsen et al. (2008) and Epstein et al. (2008) are in line with each other, so the principles of good classroom management are quite clear, although their relative importance is not known.

The recommendations of Epstein et al. (2008) concerned elementary schools, the context in which most of the studies included in the Simonsen et al. (2008) and the Oliver, Wehby, and Reschly (2011) were conducted. In elementary schools, in which one teacher is responsible for most of the lessons for each class, it is relatively easy to create classroom practices for which the suggested principles are adapted and put in place. In middle school, in which one class of students receives instruction from several teachers, implementing good practices in all aspects of efficient classroom management for every lesson of a class is more complicated, as it requires close cooperation of several teachers. However, as the behaviour problems are common also in the middle schools, interventions are needed to address the needs of some middle school classes to enhance learning climate (see Emmer and Gerwels 2013).

Some class-wide interventions have been applied and studied in middle schools. Gottfredson, Gottfredson, and Hybl (1993) studied the effects of an intervention with several targets: the whole school (to review and revise school discipline policy), school–parent cooperation (to increase the frequency of communication with parents) and classroom practices (to improve classroom organisation and management, to clarify the expectations for student behaviour and to respond consistently to misbehaviour and reinforce desirable behaviour). In general, they reported that the intervention resulted in improvement in student behaviour after a class-wide intervention. The intervention included classroom seating arrangements; frequent reminders about

classroom rules; evaluative teacher comments on students' behaviour in relation to the rules at the end of the lessons; arranging activities that the students valued depending on the students' behaviour; and student self-assessments regarding following the rules. Neither of these studies allow for assessment of the independent effects of the different components of the interventions. However, Gottfredson, Gottfredson, and Hybl (1993) concluded that the changes made at the classroom level appeared responsible for modifying student behaviour in their study.

Johnson, Stoner, and Green (1996) compared the effects of three class-wide interventions (class syllabus and individual student achievement assessment, selfmonitoring and active teaching of classroom expectations with behaviour-specific praise for following them) in a seventh-grade class. The active teaching and praiseintervention proved to be the most effective and also, when implemented in different lessons by other teachers, resulted in a decrease in disruptive behaviours and an increase in academic engagement.

The few studies conducted indicate that the same principles found effective in elementary school classrooms are also effective in middle schools. A good candidate for simple and effective practice seems to be clarifying the classroom rules and behavioural expectations, monitoring students' adherence to them and using behaviourspecific praise. These components are included in the suggestions of both Simonsen et al. (2008) and Epstein et al. (2008) and in all above-mentioned packages studied in the middle school. They were also found by Johnson, Stoner, and Green (1996) to be superior to other studied interventions. Furthermore, clear behavioural expectations and positive feedback are the core elements of school-wide positive behaviour interventions and support (Horner, Sugai, and Anderson 2010), which has proven to be effective in elementary schools in reducing student suspensions and office discipline referrals (Bradshaw, Mitchell, and Leaf 2010), and in improving classroom climates and the social competence of the students (Sørlie and Ogden 2007).

To meet a need to reduce disruptive behaviour and improve classroom learning climates in middle schools, we developed an intervention based on clear behavioural expectations, behaviour-specific praise and predetermined responses to high rates of inappropriate behaviour. The intervention was carried out by teachers, working in cooperation supported by consultation meetings. The purpose of this pilot study was to evaluate the effects of the intervention on the learning climate, on the strain experienced by teachers when teaching the class and on the time devoted to maintain positive learning climates during lessons. Also, the acceptability of the intervention was studied.

Methods

The study was conducted as a part of the development project of the Finnish National Board of Education. The invitation letter was sent to the principals of the middle schools within the project network, instructing them to make the decision to participate on the basis of the staff meeting response. The schools were asked to select one or two classes in which several of the teachers considered the learning climate to be poor. The parents were approached with a letter from the schools, describing the study and asking them to sign their consent for their children to participate.

Eighteen general education schools enrolled in the study. Each school continued its own procedures and no other interventions were systematically implemented in

the participating schools during the study. Two schools withdrew from the project prematurely, one due to unsuitable schedule, the other due to low commitment of the teachers. The analyses were conducted with 28 (21 seventh, 6 eighth and 1 ninth grade) classrooms, in which the intervention was conducted for approximately two months. The mean number of students in a classroom was 19.0 (SD = 2.8; range 15–26) and the mean proportion of males was 53.7% (SD = 11.9; range 17.4–70.6%). Background information was available on those teachers who were teaching the classes at the pre-assessment. Of the teachers, 29.9% were males, 97.3% held qualifications for either subject, special education or elementary school teacher, and 65.6% had more than 10 years of teacher experience. The mean age of the teachers was 44.9 years (SD = 10.1; range 25–64 years).

The intervention started with an approximately three-hour consultation meeting at each school, in which the teachers teaching the participating classes at that time participated. The meeting consisted of basic information on classroom management, especially on the importance of clear behavioural expectations and positive feedback for appropriate behaviour. The teachers discussed and agreed on the two most important student behaviours that disrupted the learning climate, and rephrased them as behavioural goals for the students (e.g. 'The students talk out of turn' became 'I wait for my turn to talk'). The teachers also set a weekly limit for disruptive behaviour (i.e. what percentage of the goal evaluations (see later) was allowed to be negative). The limit was set at 20–30%. The teachers were instructed to give simple and concrete positive feedback during and after the lessons when the students succeeded in meeting the goals. To ensure the continuity of the intervention over the periodic changes in the curriculum involving new teachers, a special education teacher from each school was responsible to inform and instruct new teachers about the intervention at a change of the periods.

The homeroom teachers explained the intervention, the reasons for it and the behavioural goals to the students. The subject teachers were instructed to discuss the intervention with their students, and to describe what the behavioural goals specifically meant during their lessons. After each lesson, the subject teachers evaluated the behaviour of each student in relation to the goals by marking whether the student had reached each behavioural goal on a yes or no basis. The evaluations took three to five minutes to complete. At the end of each week, the teachers returned their evaluation sheets to the homeroom teachers, who summarised the evaluations for each student (taking 20–30 min). The homeroom teachers were instructed to use a portion of a weekly homeroom session for positively oriented class-level feedback based on these summaries.

If a student exceeded the limit set for not meeting the goals, the student services team informed student's parents. When a student exceeded the limit for the first time, a discussion with his/her parents was arranged at school within the next week. If a student exceeded the limit again, discussions with a team of teachers and possibly, other school personnel (appointed by the school) were arranged. The discussions during these meetings were restricted to the behavioural expectations set for the class. Each school arranged these meetings according to its own procedures.

During the intervention, the consultant met with the teachers monthly. At the meetings, each teacher was asked his/her opinions about the intervention and the teachers made a consensus decision regarding the continuation of the intervention. For six of the schools (10 classes), the consultant was a special education teacher (author TK; trainer consultant), who had been involved in the development of the

intervention. For the other schools, the consultants were a special education teacher and a teacher of musical education. Their training consisted on familiarising with the consultation material and observing three consultation meetings led by the trainer consultant. The trainer consultant observed two of the trainees' consultation meetings and gave feedback on them. Phone calls and e-mail discussions followed on as-needed basis.

The questionnaires to assess the changes in the learning climate were formed on the basis of Levin and Nolan's (2010) model of discipline problems in the classroom. They were composed of statements on (1) students' possibilities to study and concentrating on teaching; (2) disruptive behaviour; (3) physical and psychological safety; and (4) caring for the physical environment. The questionnaires were modified on the basis of an earlier pilot study (Peitso, Kiiski, and Närhi 2011). The teachers and students filled in the questionnaires during the week prior to the consultation meetings.

The teacher questionnaire consisted of 17 statements on a six-point Likert scale (describing working in the classroom from 'very poorly' to 'very well'). Four of the statements were related to concentrating on teaching (e.g. 'Students pay attention to teaching well'), five to disruptive behaviour (e.g. 'It is too noisy during lessons'), five to safety (e.g. 'Students mock each other for answering incorrectly') and three to caring for the classroom environment (e.g. 'Students leave the classroom tidy after the lessons'). The teachers also answered four statements on the strain they experienced in teaching the class (e.g. 'I feel stressed about teaching this class'). The reliabilities of the scales were good across three assessments (Table 1). The teachers approximated the proportion of time they devoted to maintaining a positive learning climate during lessons with the class by marking it on a bar representing the whole lesson.

The student questionnaire consisted of 21 statements on a four-point Likert scale (ranging from 'in my classroom this happens never' to '... in all lessons'). To compare the sample to the representative sample of Finnish students, we included statements from the Finnish PISA questionnaire (Holopainen et al. 2009). The reliabilities were consistently good for the scales 'Concentrating on teaching' and 'Disruptive behaviour' and for the scales 'Safety' and 'Caring for environment', the reliabilities were moderate (Table 2).

Table 1. The means, standard deviations and Cronbach's alphas of the teacher evaluations of the learning climate; the proportion of the lesson used for maintaining a positive learning environment; and the teacher-experienced strain in teaching the class at different assessment points.

	Pre			1st month			2nd month		
	М	SD	α	M	SD	α	M	SD	α
Concentrating on teaching	3.49	0.41	0.87	4.16	0.53	0.87	4.14	0.52	0.89
Disruptive behaviour	3.84	0.40	0.91	3.03	0.53	0.91	3.01	0.56	0.91
Safety	4.39	0.45	0.77	4.73	0.42	0.73	4.77	0.49	0.71
Caring for environment	4.16	0.39	0.77	4.57	0.39	0.70	4.50	0.46	0.74
Strain	2.68	0.46	0.87	2.32	0.46	0.85	2.31	0.46	0.87
Proportion of the lesson used for maintaining a positive learning climate; %	28.76	6.80	n.a	22.63	7.23	n.a.	21.12	7.87	n.a.

		Pre			1st month			2nd month		
	М	SD	α	M	SD	α	M	SD	α	
Concentrating on teaching	2.51	0.16	0.77	2.83	0.18	0.83	2.93	0.22	0.84	
Disruptive behaviour Safety	2.50 3.09	0.19 0.28	0.83 0.63	2.13 3.28	0.18 0.25	0.82 0.66	2.02 3.34	0.18 0.24	0.84 0.72	
Caring for environment	3.05	0.23	0.62	3.21	0.20	0.60	3.27	0.28	0.69	

Table 2. The means, standard deviations and Cronbach's alphas of the students' evaluations of the learning climate at different assessment points.

The acceptability of the treatment was assessed after the intervention with two statements, adapted from Martens et al. (1985). A six-point Likert scale (ranging from 'strongly disagree' to 'strongly agree') was used for all participants. The principals were interviewed on the phone, and paper questionnaires were used for the teachers and the students.

The changes in the learning climate were evaluated through repeated measures of ANOVAs. The significance level was set at p < 0.05, and the magnitude of the change was evaluated with a partial eta-squared. The changes were evaluated at the classroom level by averaging the teachers' and students' evaluations separately at each assessment phase.

Results

Comparisons to the Finnish PISA 2009 (Organisation for Economic Cooperation and Development 2009) sample indicated that the students of the study sample perceived (at pre-assessment) their possibilities to concentrate on learning (statement 'Students cannot work well'; M = 2.71; SD = 0.73) to be poorer than the students of the PISA sample (M = 2.16, SD = 0.54; independent samples *t*-test; t(745.15) =8.52; p < 0.001; Cohen's d = 0.29). The students of the study sample (M = 2.50, SD = 0.82) had also observed more disruptive behaviour during their lessons (statement 'There is noise and disorder') than students of the PISA sample (M = 1.94, SD = 0.78; independent samples *t*-test; t(662.26) = 6.39; p < 0.001; Cohen's d = 0.26). These results indicate that the learning climate in the classes, which were nominated by teachers, was also perceived poor by the student participants.

The descriptive statistics of the teacher evaluations of the scales are presented in Table 1, and the results of the repeated-measures ANOVAs in Table 3. The analysis showed significant improvement in the learning climates of the classes. Also, the decrease in both the proportion of the lessons used for maintaining a positive learning climate and the teacher-experienced strain in teaching the classes were significant. On the basis of the partial eta-squared values, the changes in all measures were large. The changes occurred between the pre- and first assessment, with no changes between the first and second assessments.

To analyse the effect of the experience of the consultant, the teacher evaluations were subjected to mixed-model ANOVAs, in which the experience of the consultant (experienced vs. trained) was the grouping variable, and the pre-, first and second assessments were within-subject variables. The main effect of the experience of the consultant was non-significant on all variables. The only significant interaction between the grouping and the within-subjects variables was in the proportion of the

	Model		Pre vs.	1st	1st vs. 2nd	
	F(2,54)	η_p^2	<i>F</i> (1,27)	η_p^2	<i>F</i> (1,27)	η_p^2
Concentrating on teaching	66.92 ^{**a}	0.713	74.69**	0.734	0.17	0.006
Disruptive behaviour	85.34**	0.760	106.41**	0.798	0.20	0.007
Safety	31.73**	0.540	31.73**	0.540	0.55	0.020
Caring for environment	40.26^{**}	0.599	64.46**	0.705	2.71	0.091
Strain	21.08^{**}	0.438	24.17**	0.472	0.94	0.000
Proportion of the lesson used for maintaining a positive learning	19.29**	0.417	21.82**	0.447	2.02	0.070

Table 3. The results of the repeated-measures ANOVA analysis on the teacher evaluations.

Note: η_p^2 = Partial eta-squared.

^aGreenhouse-Geiser corrected degrees of freedom (1.62; 43.75).

***p* < 0.001.

lesson used for maintaining a positive learning climate (F(2,25) = 3.781; Wilks' $\lambda = 0.768$; p = 0.037). Further analysis on the interaction indicated that the reduction in the proportion was larger during the second month of the intervention, when the teachers were consulted by newly trained consultants than when consulted by experienced consultant. Based on these analyses, the experience of the consultant did not have a marked effect on the results. To analyse the possible effects of grade level on the results, similar mixed-model ANOVAs were conducted using the grade level (seventh vs. eighth and ninth) as the grouping variable. All main and interaction effects were non-significant.

The descriptive statistics for the student evaluations are presented in Table 3 and the results of the repeated-measures ANOVAs in Table 4. The analysis showed that also according to the students' evaluation, the learning climate improved on all scales. The partial eta-squared values show that the changes in all measures were large. The largest change occurred between the pre- and first assessment. For the scales 'Concentrating on teaching' and 'Disruptive behaviour', the change was significant also between the first and second assessments.

The possible effects of the experience of the consultant and of grade level on the students' evaluations were analysed with mixed-model ANOVAs similar to those

	Mod	el	Pre vs.	1st	1st vs. 2nd		
	<i>F</i> (2,54)	η_p^2	<i>F</i> (1,27)	η_p^2	F(1,27)	η_p^2	
Concentrating on teaching Disruptive behaviour Safety Caring for environment	98.69 ^{**a} 124.36 ^{**} 32.61 ^{**} 20.37 ^{**}	$\begin{array}{c} 0.785^{a} \\ 0.822 \\ 0.547 \\ 0.430 \end{array}$	144.39** 120.51** 39.36** 26.00**	0.842 0.817 0.593 0.490	13.47 [*] 17.72 ^{**} 3.45 2.18	0.333 0.396 0.113 0.075	

Table 4. The results of the repeated-measures ANOVA analysis on the students' evaluations.

Note: η_p^2 = Partial eta-squared.

^aGreenhous-Geiser corrected degrees of freedom (1.57; 42.59).

p* < 0.01; *p* < 0.001.



Figure 1. The percentages of the answers of different respondents to the arguments on the acceptability of the intervention.

Note: The wordings of the arguments were modified for different respondents. The argument regarding the negative effects was not presented to the principals.

used with teacher evaluations. In both sets of analyses, all main and interaction effects were non-significant.

The acceptability of the intervention was very high among both principals and teachers (Figure 1). The students were more critical of the intervention, although a majority of students also reported it to be acceptable (e.g. two-thirds of the students would suggest that the teachers apply the model to other classes as well).

Discussion

In this pilot study, we observed large improvements in the learning climate of middle school classes during a classroom-wide intervention. Improvement was evident on both teacher and student evaluations. The intervention was carried out by the teachers and supported with monthly consultation meetings. The intervention followed the evidence base of efficient classroom management. It was tailored for middle school, in which each class is taught by several teachers. In order to maximise the potential for practical organisation and teacher participation, the consultations were planned to be brief, practice oriented and aiming at specific problem behaviours. These features have been observed to be important in enhancing the effects of consultation in educational settings (Sheridan, Welch, and Orme 1996).

The strain teachers felt in teaching the class reduced significantly during the intervention. This reduction may be directly caused by the reduction of disruptive behaviour. Another possibility is that the intervention resulted in closer cooperation

and reduced the feelings of 'being alone' with classroom discipline problems. The third possibility is that the clear guidelines regarding how to deal with discipline problems provided a clear framework for teachers on how to respond to disruptive behaviour, and consequently, reduced the need to think about and choose the ways to react in teaching situations. Further studies on the reduction of strain experienced by teachers are needed, but, whatever the cause, any reduction in strain increases teachers' opportunity to concentrate on teaching itself.

Increased opportunity to concentrate on teaching was evident in the reduced proportion of lesson needed to maintain a positive learning climate. According to their own evaluations, the teachers used 29% of their lesson for maintaining the learning climate at the pre-assessment; by the end of the intervention, this proportion was 21%. This means 3.5 min per 45-min lesson, and over the course of an average school week, 2 h less time spent on maintaining learning climate and correspondingly, more time for teaching and learning.

In developing interventions to be used in everyday settings, it is vital that they are easily transferable and adoptable. One consultant was very familiar with the intervention and the other two consultants were trained for the intervention with a light introduction. The analysis showed no effects related to consultant experience on the efficacy of the intervention. This result implies that the intervention is easily teachable and transferable. The observations of the change being independent of the grade level indicate that the intervention is also adoptable at all grades in middle school, although the certainty of this conclusion is reduced by the unequal number of classes at different grade levels.

Another issue affecting the possibility of actually implementing the intervention is its acceptability. Teachers of only one class decided to terminate the intervention during the study, and the teachers and principals considered the intervention highly acceptable. This is not surprising, not only did the teachers select the classes for the intervention, but the intervention also required a minimal amount of time, was based on positive feedback for students and was accompanied with reduction of problematic behaviour. These aspects have been generally found to enhance intervention acceptability among teachers (Elliott 1988).

The students' evaluations of acceptability were not equally positive in absolute terms. Naturally, we would have preferred to see more favourable evaluations from the actual 'end users' of the intervention. Unfortunately, we did not have preintervention data on the student's evaluations of the acceptability of their teacher's classroom management, so no intervention-induced differences could be analysed. Moreover, since the student's acceptability of comparable interventions, at least to our knowledge, has not been studied, we are not able to conclude whether the students' acceptability ratings were at typical level. In practice, the acceptability was at least sufficient, since there was no need to terminate the intervention in any class, nor did the teachers report any significant complaints from the students.

The most serious methodological limitation of the study was the lack of a control group, resulting that the magnitude of the change resulting directly from the intervention cannot be estimated. It is also possible that the training given to the teachers and the briefings given to the students had effected their evaluations and consequently, the results of the study. Another limitation of the study was the lack of fidelity measures (see Gearing et al. 2011). The consultants were guided by the intervention material, and we expect their behaviour to have been in concordance with it. The intervention was based on principles of positive behaviour support, and

this was consistently emphasised in the consultation meetings, but without direct measures of teachers' behaviour, we don't know the extent teachers adhered to the principles. For the same reason, it is also possible, that the discussion held between the school staff and the parents in the case of persistent disruptive behaviour had not been purely positively oriented. We expect the fidelity of teachers' behaviour to have been generally high, but also to have varied among classes and teachers. The results were based on observations while the intervention was active, and with the present data, we were not able to assess the long-term effects of the intervention. In future studies, application of a more rigorous design and the assessment of fidelity at various levels (consultants, school management and teachers) is essential, as is the evaluation of the long-term effects of the intervention.

Conclusions

During a light, acceptable and easily transferrable intervention, large improvements occurred in the learning climates of middle school classrooms. The intervention was carried out by teachers, who, in cooperation with each other, agreed on behavioural goals for students and guided, each during their own lessons, students towards the goals. The intervention was based on the principle of positive behaviour support, accompanied by immediate actions in cases of high rates of disruptive behaviour. In terms of the three-tiered model of school support, the intervention is a form of universal, class-wide support or prevention (Tier 1), since it is targeted to all students of a class.

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