

Paper I

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Learning Environment, Meaningfulness of Schoolwork and On-Task-Orientation among Norwegian 9th Grade Students.

ELIN THUEN and EDVIN BRU

Stavanger University College Centre for Behavioural Research

ABSTRACT The main aim of this study was to explore how learning environment dimensions are related to on-task-orientation, and how these relations are mediated by students' perceptions of the meaningfulness of schoolwork. The study was conducted as a survey among a representative sample of 2006 Norwegian 9th graders. Results showed that a majority of the students reported to be on-task-oriented during school lessons, however, between 10 and 20% reported to have problems with their on-task-orientation. At the same time, slightly more than half of the students reported their schoolwork to be useful, whereas one in five students reported their schoolwork to be rather uninteresting.

On-task-orientation was also found to be related to students' perceptions of several learning environment dimensions, primarily to students' perceptions of teacher support (academic and emotional), the possibility for influencing ones' schoolwork and the meaningfulness of schoolwork. Associations of perceptions of teachers' support and student influence with on-task-orientation were partly mediated via perceptions of the meaningfulness of schoolwork. Finally, results indicate that there is likely to be considerable room for improvement, within Norwegian schools at least, in the areas of teachers' emotional support of students, students' influence on schoolwork and the meaningfulness of school subjects.

For practising school psychologists results seem to imply an increased focus on the learning environment, and particularly on the importance of the social emotional dimensions for students' motivation and on-task-orientation. In order to bring about changes in the learning environment, counselling teachers on how to create a supportive learning environment with student influence could be one important way of approaching this field.

Please address correspondence to: Elin Thuen, Stavanger University College, Centre for Behavioural Research, P.O. Box 2557 Ullandhaug, N-4004 Stavanger, Norway

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Introduction

National studies indicate that lack of on-task-orientation and disruptive behaviour have become an increasing problem in Norwegian schools (Nordahl and Sørli, 1998; Ogden, 1998), as in schools in other western societies (Chazan et al., 1994; Winkley, 1996). Previous research indicates that many teachers perceive lack of on-task-orientation as a serious problem (Dawson 1980, 1981; Merrett and Wheldall, 1987; Veenman, 1984). Lack of on-task-orientation is a problem for teachers as well as fellow students, and may seriously reduce the learning outcome of students. In Norway today there is increased effort to find measures to improve on-task-orientation among students. It is therefore important to explore which factors influence on-task-orientation. The main purpose of this study is to explore how learning environment dimensions are related to on-task-orientation, and how these relations are mediated by students' perceptions of the meaningfulness of schoolwork. In the present study the concept 'on-task-orientation' is operationally defined as students' concentration during the accomplishment of tasks at school, and their attention during teachers' instructions.

Several dimensions of the learning environment probably influence on-task-orientation. In this study we therefore implement a multifactorial approach to the understanding of on-task-orientation. The theoretical approach will incorporate ideas and empirical findings from literature on classroom management as well as work psychology, and we will focus on learning environment dimensions like teacher support, teacher monitoring, student influence, competition for grades, relations between classmates and students' perceptions of the meaningfulness of schoolwork.

Researchers studying students' classroom behaviour are increasingly focusing on how student behaviour is influenced by students' perceptions of different learning environment dimensions or classroom events (Schunk, 1992). Despite this increased interest in student perceptions, however, there is still relatively little research based on the students' point of view (Fullan, 1992). The present study is therefore given a student perspective in the way that all variables included are assessed by student report.

Meaningfulness of schoolwork

The meaningfulness of schoolwork is seen as an important learning condition. Previous research indicates, however, that a substantial percentage of students perceive their schoolwork as boring and of little interest or meaning (Fullan and Eastabrook, 1973; Goodlad, 1984; Stevenson, 1990). The importance of the perceived meaning of work for motivation is emphasized in work psychology. Research indicates that when the employees experience their work as meaningful, they experi-

ence higher job-satisfaction and more inner motivation (Hackman and Oldham, 1976; Locke and Taylor, 1991). Perceptions of schoolwork as meaningful and interesting are probably, in a similar way, linked to student motivation and on-task-orientation. This relation has, however, received relatively little scientific attention and, according to Stevenson (1990), we know little about the characteristic of either classes or the forms of schoolwork that engage students. Keller (1983) underscores the fact that students' perceptions of the personal meaningfulness of schoolwork or meaningfulness of the learning material are important to their motivation and academic effort. Cennamo and Braunlich (1996) claim that when students perceive their tasks as relevant, they perceive that important personal needs are being met by the learning situation. In their study they found that increased meaningfulness of a lesson, increases the amount of mental effort invested in the tasks. In another study, Stevenson (1990), found a relationship between students' perceptions of relevance of schoolwork and involvement. Moreover, Firestone and Rosenblum (1988), found that meaningfulness of schoolwork or sense of purpose is a major school context factor that affects student commitment and behaviour. Finally, Mortimore et al. (1988), found that challenging and interesting work affected student involvement.

Teacher support and monitoring

Within theories of work psychology, leader behaviour has received much attention. Research indicates that leader behaviour is important to the employees' motivation (Cooper and Smith, 1985; Cooper et al., 1993). The teacher is the formal leader of the school class, and both the supportive and monitoring aspects of the teacher function are likely to influence on-task-behaviour directly, and indirectly through students' perceptions of the meaningfulness of schoolwork.

An important aspect of teachers' supportive function is their academic support of students. When teachers instruct or explain well and offer students relevant and needed help with their work, the students will know what to do and how to do it, and a likely result is more motivated and on-task-oriented students. Evertson and Emmer (1982) found a correlation between clear and explicit instructions for assignments and on-task behaviour at both elementary and junior high levels, and Atwood (1983) found that the clarity of an assignment was positively associated with task involvement. Moreover, academic support may also influence on-task-orientation indirectly by improving the students' perceptions of the meaningfulness of schoolwork. Teachers who explain well and are able to make the subjects engaging, probably contribute to improve students' interests for the subjects. Small (1996) found that students themselves perceived the teachers and their instructions to be of major importance to their own perceptions of interest of schoolwork.

Emotional support is another important dimension of teachers' support of students. Besides academic approval, emotional support will, in this study, include social approval and expression of care and appreciation. Several studies have focused on the relationship between emotional support and on-task behaviour. Thomas et al. (1978) found that the correlations between rates of approval and class level of on-task behaviour tend to be positive, but low. Moreover, Merrett and Wheldall (1987) found similar results for relations between on-task behaviour and academic approval, as well as social approval. Nafpaktitis et al. (1985) recorded off-task rather than on-task behaviour, and found a positive and strong correlation between teacher disapproval and off-task behaviour. It is also believed that emotional support, as well as academic support, is important to reduce students' fear of failure, and could in this way increase on-task-orientation. Moreover, theories of motivation claim that expectancy of success is an important factor for motivation (e.g. Atkinson, 1964; Atkinson and Birch, 1987).

Teachers' care and approval of students are probably a cornerstone for developing positive relations between teachers and students. Positive relations between students and teachers may in turn increase students' willingness to be committed to goals for schoolwork introduced by the teachers (compare French and Raven's thoughts on power, e.g. French and Raven, 1959; Schmuck and Schmuck, 1992), and a likely result is increased on-task-orientation. Such commitments may also help students gain insight necessary to discover the meaningfulness of the topics addressed at school. In this way emotional support may also increase on-task-orientation indirectly by affecting students' perceptions of the meaningfulness of schoolwork. Fry and Coe (1980) found that classrooms with a social climate perceived by students to be affiliation-oriented (i.e. characterized by emphasis on student-teacher rapport, support and interaction) had a significant number of students reporting enjoyment of learning and motivation for academic success. Authors within the field of work psychology also regard approval to be an important factor influencing the perceived meaning of work (see Hackman and Oldham, 1976; Locke and Taylor, 1991).

Monitoring is the third aspect of teacher functioning that we focus on in this study. Several studies have addressed the relations between monitoring and on-task-orientation or similar variables. A major concern for Doyle (1980) is the positive significance monitoring has for the learning tasks. He emphasizes that monitoring individual progress can afford opportunities for corrective feedback, and that the proximity of the teacher can prevent inappropriate and disruptive behaviour from starting. In his study Doyle (1986) found that teachers in junior high classes who actively monitored and paced deskwork and kept individual contact brief were more successful in maintaining engagement and

minimizing inappropriate behaviour. Moreover, teachers' monitoring may also influence students' on-task-orientation indirectly by affecting students' perceptions of the meaningfulness of schoolwork. When teachers are able to monitor student activity, students may be pushed to invest more time and effort in the learning tasks, and thereby be helped to discover the meaningful aspects of school subjects.

Monitoring as a form of teacher control is, however, not necessarily always positive. There is probably a gradual transition between positive and supportive forms of control, and forms of control that have negative motivational consequences. Fry and Coe (1980) found that classrooms with a social climate perceived by students to be control-oriented (i.e. in which teacher control is high and the teachers' emphasis is on organization and order), had a significant number of students reporting a significant level of anti-school feeling and lower enjoyment of learning.

Student influence

In work psychology the employees' possibility of influencing their work, and its consequence for motivation has drawn much attention (Karazek and Theorell, 1990). Research indicates that the possibility of influencing your own work-situation is an important indicator of a good working environment (Hackman and Oldham, 1976; Johnson, 1986; Karasek, 1981; Karasek and Theorell, 1990). For most people it is important to influence and participate in decisions concerning themselves (Karasek, 1981). In school this means that the teachers have to involve the students in the shaping of learning activities. When the students feel that the teachers listen to them and allow them to influence the decisions regarding school matters, is it likely that they will feel more responsible and motivated, and therefore work more concentrated.

Educational theory and research have paid relatively little attention to student influence or autonomy. The understanding has been that the teacher rules, and, in the past, most research on classroom management has focused on teacher control (Doyle, 1986). The students and their need for and possibilities of influencing their own situation have received less attention. At an early point Flanders (1970) was preoccupied with teacher behaviour and its consequences for student achievement and attitudes. He believed that there was too much teacher talk and not enough student talk in most classrooms, and that teachers should be more 'indirect', and, in particular, should more often accept, praise and make instructional use of the ideas and feelings expressed by their students. He found positive correlations between praise and acceptance of students' ideas and students' attitudes (liking the teacher and the class), and negative correlations between restrictiveness and negative authority and attitudes. Results from Firestone and Rosenblum (1988) indicate that student influence is a major school context factor that

affects student commitment and therefore also student behaviour.

Deci et al. (1981) found that students of autonomy-supporting teachers tended to display more intrinsic motivation – in the form of more curiosity, preference for challenge and independent mastery attempts – as well as higher levels of perceived competence and self-esteem, than did students in the classroom with more controlling teachers, and, moreover, results from Grolnick and Ryan (1987) indicate that children who perceived their classroom to be more supportive of autonomy, were more intrinsically motivated and had higher self-esteem than children who perceived their classroom to be more controlling.

Student influence may also contribute to improve on-task-orientation indirectly by affecting students' perceptions of the meaningfulness of schoolwork. Previous research indicates that students themselves see student influence as an important factor in making their schoolwork more meaningful and interesting (Hootstein, 1994). This finding is also compatible with Deci and Ryan's (1992) claim that interest in learning activities is enhanced by student choice and sense of self-determination.

Competition for grades

Relations between on-task-orientation and competition for grades are likely to be complex (Deci and Ryan, 1992). On the one hand, competition for grades may contribute to on-task-orientation by strengthening the incentive value of school subjects. This positive effect of competition will particularly be the case for students who perceive that they succeed in school or are doing better than others (Deci and Ryan, 1992). On the other hand, competition is not always positive. Especially for low achieving students, competition can contribute to fear of failure, which is likely to have negative motivational effects. Deci and Ryan (1992) claim that evaluation and competition for good grades, like other means of control, seem to limit students' self-determination, and correspondingly, to undermine their intrinsic motivation. They claim also that students who receive negative feedback, for example in form of poor grades, may lose extrinsic, as well as intrinsic, motivation. Moreover, research indicates that students who are task involved show higher motivation than ego involving students who are focusing on comparison with others (Nicholls, 1984). Finally, the focus on grades may also remove focus from parts of the content that the students find interesting, and thereby affect the perceived meaning of schoolwork as well as on-task-orientation negatively.

Relations between classmates

Friendly relations or friendships are important in ensuring positive interactions among age mates, as well as in the acquisition of social skills (Hartrup, 1983). Having friends in class probably contributes to students

feeling accepted by their classmates, and it also means that the students have someone to share thoughts and experiences with, something that is very important, especially for adolescents (Dunn and McGuire, 1992). Researchers (e.g. Damon, 1984; Furman and Gavin, 1989) have argued that close and harmonious relationships with peers are related to good social and academic adjustment to school. These assumptions are supported empirically by results from a study conducted by Ladd (1990), who found that children's friendship ties in the classroom were associated with better school adjustment. Moreover, Berndt and Keefe (1992) found associations between reports of negative associations with classmates and disruptive behaviour. Finally, Schmuck (1963) found that rejected students, particularly during early adolescence, experience alienation from the learning environment and are unable to concentrate for long periods of time on intellectual tasks.

Purposes of the present study

The main aim of this study is to explore how learning environment dimensions are related to on-task-orientation, and how these relations are mediated by students' perceptions of the meaningfulness of schoolwork. Other purposes are to assess students' on-task-orientation and their perceptions of the meaningfulness of schoolwork.

Method

The study was conducted as a survey among a representative sample of 2006 Norwegian 9th graders. The response rate was 86 percent. Respondents were asked to complete a questionnaire during a regular 45-minute classroom period with a teacher present. As a means to ensure optimal completion of the questionnaire, also for dyslexic students, teachers read each question aloud. To avoid students influencing each other's responses, the questionnaires were administered, to the extent possible, at the same time for each class at every school.

Students' perceptions of their learning environment were assessed by a scale developed for this purpose by our research institute. The original scale was constructed to assess students' perceptions of teachers' academic support, teachers' emotional support, teachers' monitoring and relations between classmates. The original scale, presented by Bru et al. (1998), was in this study extended by four items on teachers' praise and care for students, five items assessing students' perceptions of influence on the shaping of learning activities (see appendices for wordings and statistical information for items on student influence and teachers' approval of students), and four items on competitiveness from the 'Learning Environment Inventory' (Fraser et al., 1982). The four items with the highest factor loading on the 'Competitiveness' dimension were

chosen. The items assessing learning environment had all a four-step scoring format; 'disagree strongly', 'disagree a little', 'agree a little', and 'agree very much'.

Students' perceptions of on-task-orientation and the meaningfulness of schoolwork were assessed by scales developed for this particular study. The on-task-orientation scale includes items assessing students' attention during instruction and their concentration on work tasks when working individually and during group work. Factor analysis of items implementing varimax rotation and an eigenvalue of 1 yielded a one-factor solution, indicating that the scale assesses a uniform concept. Students' perceptions of the meaningfulness of schoolwork were assessed by a semantic differential scale that included three items on how useful, meaningful and interesting students find schoolwork. Factor analysis of items included in this scale also yielded a one-factor solution. Wording, response alternatives and descriptive statistical information for items included in the scales assessing on-task-orientation and students' perception of the meaningfulness of schoolwork are presented in tables 1 and 2, respectively.

Scores for class size, gender, grades (mean of grades in mathematics and Norwegian), general support from parents, parental interest and support for schoolwork and parental monitoring were entered as control variables in multiple regressions. General support from parents was assessed by the care dimension of the Parental Bonding Instrument (Parker et al., 1979); ($\alpha = 0.73$). Parental monitoring was assessed by a scale developed by Alsaker et al. (1991); ($\alpha = 0.87$). Examples of items included in this scale are 'My parents know where I am and what I do in my free time' and 'My parents know fairly well with whom I usually keep company'. Finally, parental interest and support for schoolwork was rated by a scale constructed for this particular study ($\alpha = 0.69$). Examples of items included in this latter scale are 'My parents are interested in my schoolwork' and 'My parents often help me with my schoolwork'.

Statistical analyses included product-moment-correlations, Spearman correlations, reliability testing (Cronbach's alpha), factor analysis and multiple regression analysis. All analyses were conducted with the SPSS program (Norusis, 1986). In factor analysis, a least-square model with varimax rotation was implemented, and factor scores extracted from this analysis were used as independent variables in regression analyses to avoid problems with multicollinearity.

Dimensionality of items assessing the learning environment was explored by factor analysis implementing varimax rotation and criteria for eigenvalue set at 1. The factor analysis yielded a six-factor solution that was in accordance with the expected sub scales of the implemented learning environment instrument. Items concerning care and appreciation formed one factor together with the original items on student

perceptions of emotional support from teachers, and was labelled 'Teachers' emotional support.' The six factors accounted for a total 57 percent of the variance in items on learning environment. The factors were (explained variance in parenthesis): 1) 'Teachers' emotional support' (14.1 percent), 2) 'Teachers' academic support' (10.5 percent) 3) 'Competition for grades' (9.1 percent), 4) 'Teachers' monitoring' (8.2 percent), 5) 'Relations between classmates' (7.7 percent) and 6) 'Student influence' (7.1 percent).

Results

Results for items assessing on-task-orientation are given in Table 1. Generally, a majority of the students agreed (a little or strongly) with the positive statements on on-task-orientation. However, students reported higher levels of concentration when they worked individually than when they were required to listen to the teachers' instructions. About ten percent of the students disagreed with the positive statement on their concentration when they were working individually, whereas almost twice as many (19.1 percent) of the students disagreed with the positive statement on their concentration when teachers instructed the whole class. Differences in percentage distribution yielded a Pearson chi-square value (χ^2) of 262.81 ($p < 0.01$).

Table 1 *Percentage distribution, mean scores and standard deviations for responses to items included in the scale assessing on-task-orientation*

	<i>Disagree strongly</i>	<i>Disagree a little</i>	<i>Agree a little</i>	<i>Agree strongly</i>	M	SD
<i>On-task-orientation ($\alpha = 0.75$)</i>					<i>2.19</i>	<i>0.52</i>
<i>When we work individually I am concentrated on tasks</i>	1.3	8.3	44.8	45.6	2.35	0.69
<i>When we do projects I am concentrated on tasks</i>	1.2	9.9	48.2	40.7	2.28	0.69
<i>When we do group-work I am concentrated on tasks</i>	1.4	12.8	54.6	31.2	2.16	0.69
<i>When teachers instruct the whole class I pay attention</i>	2.6	16.5	60.5	20.4	1.99	0.69

Scale label, Cronbach's alpha, mean score and standard deviation for the scale are given in italics. Scoring range for the scale was 0-3 with 'disagree strongly' scored as '0' and 'agree strongly' scored as '3'.

Students rated schoolwork as more useful than meaningful, and more meaningful than interesting (see Table 2). For the item on the usefulness of schoolwork 55.4 percent of the students used the two most positive response alternatives, compared with 6.7 percent of the students who

Table 2 *Percentage distribution, mean scores and standard deviations for items assessing students perceptions of the meaningfulness of schoolwork. 0 is the most negative alternative whereas 5 is the most positive alternative*

	0	1	2	3	4	5	M	SD
<i>Meaningfulness of schoolwork ($\alpha = 0.79$)</i>							<i>3.10</i>	<i>1.04</i>
Useless/Useful	2.9	3.8	10.8	27.2	30.1	25.3	3.54	1.24
Meaningless/Meaningful	3.7	5.9	16.1	33.0	29.8	11.6	3.14	1.21
Uninteresting/Interesting	8.1	10.9	21.7	34.4	19.4	5.4	2.62	1.29

Scale label, Cronbach's alpha, mean score and standard deviation for the scale are given in italics.

used the two most negative response alternatives. Corresponding percentages for the meaningfulness of schoolwork were 41.4 percent and 9.6 percent. Finally, only 24.8 percent of the students used the two response alternatives nearest the statement 'schoolwork is interesting', whereas 19 percent of the students used the two response alternatives nearest the statement 'schoolwork is uninteresting'. Differences in percentage distributions were all significant at the 0.01 level.

Among the scales assessing learning environment dimensions the scale concerning relations with classmates yielded the highest and most positive mean scores (see Table 3). For this scale 79 percent of the scores

Table 3 *Mean scores, percentages of high mean scores (≥ 2) and low mean scores (≤ 1) and standard deviations for scale assessing learning environment dimensions*

	<i>a</i>	<i>M</i>	<i>SD</i>	<i>Percentage of mean scores ≥ 2</i>	<i>Percentage of mean scores ≤ 1</i>
Relations between classmates	0.78	2.22	0.53	79	3
Teachers' academic support	0.84	1.90	0.63	54	10
Teachers' monitoring	0.79	1.75	0.58	38	12
Teachers' emotional support	0.85	1.67	0.59	33	15
Student influence	0.77	1.57	0.60	29	21
Competition for grades	0.87	1.31	0.84	27	32

Scoring range for all scales were 0–3. For competition high scores indicate much competition, for the other scales high scores indicate positive assessments.

lay within the upper third of the scoring range (≥ 2), whereas only 3 percent of the scores lay within the lower third of the scoring range (≤ 1). Students rated teachers' academic support more positively than teachers' emotional support. For these scales 10 and 15 percent of the scores

lay within the lower third of the scoring range respectively. However, as many as 37 percent of the students disagreed with item 'Teachers care for me'. Students rated influence on schoolwork more negatively than teachers' academic and emotional support. For this scale 21 percent of the scores were within the lower third of the scoring range, compared to 10 percent for teachers' academic support. About 33 percent of the students disagreed with the item 'I feel that I can influence my working situation at school'. For the monitoring scale 12 percent of the scores lay within the lower third of the scoring range. Finally, the lowest scores were computed for the scale 'Competition for grades'.

All the independent variables, except 'Competition for grades', showed significant, positive correlations with scores of other independent variables. There were also significant, although weaker, positive correlations between 'Competition for grades' and 'Teachers' emotional support' and 'Student influence', and a significant, negative correlation between 'Competition for grades' and 'Relations with classmates'. 'Teachers' emotional support' yielded the stronger bivariate associations with both 'Teachers' academic support' and 'Student influence'. There were also strong, positive correlations between 'Teachers' monitoring', 'Student influence' and 'Teachers' academic support' (see Table 4).

Table 4 *Pearson product moment coefficients for correlations of scores between independent variables*

	<i>Teachers' academic support</i>	<i>Teachers' emotional support</i>	<i>Teachers' monitoring</i>	<i>Student influence</i>	<i>Relations with classmates</i>
Teachers' emotional support	0.61**				
Teachers' monitoring	0.48**	0.36**			
Student influence	0.53**	0.60**	0.38**		
Relations with classmates	0.27**	0.27**	0.21**	0.25**	
Competition for grades	-0.04	0.08**	-0.03	0.08**	-0.07**

* $p < 0.05$; ** $p < 0.01$ (two-tailed).

Factor scores for all learning environment dimensions showed significant, positive correlations with both scores for 'Meaningfulness of schoolwork' and 'On-task-orientation'. Of the variables assessing learning environment dimensions 'Teachers' emotional support' yielded the stronger bivariate associations with both 'On-task-orientation' and 'Meaningfulness of schoolwork'. However, 'Meaningfulness of schoolwork' yielded the highest coefficient of correlation with 'On-task-orientation'. Finally, all control variables except 'Class size' showed significant bivariate associations with 'On-task-orientation', whereas all control variables except gender and class size showed significant bivariate associations with 'Meaningfulness of schoolwork'. The

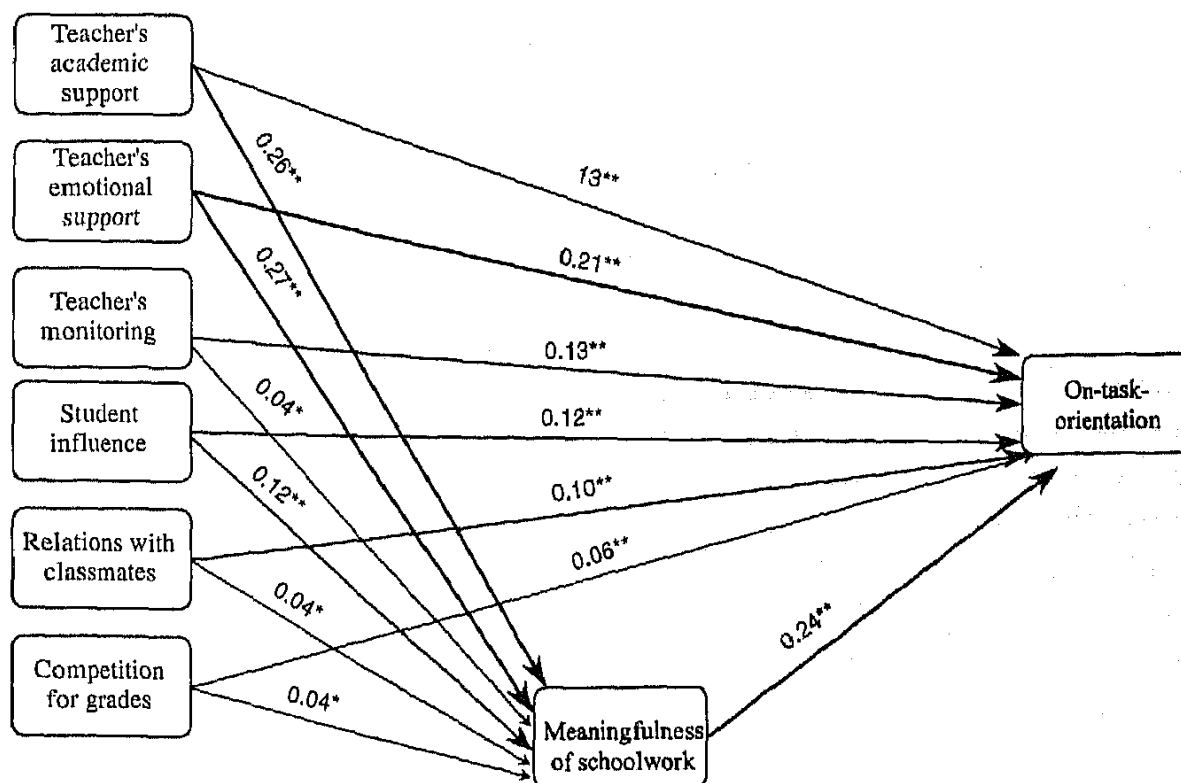
Table 5 *Pearson product moment coefficients for correlations of factor scores independent variables and scores for control variables with scores for 'meaningfulness of schoolwork' and 'on-task-orientation'*

	<i>Meaningfulness of schoolwork</i>	<i>On-task-orientation</i>
<i>Independent variables</i>		
Teachers' academic support	0.29**	0.21**
Teachers' emotional support	0.35**	0.36**
Teachers' monitoring	0.13**	0.16**
Student influence	0.18**	0.17**
Relations between classmates	0.07**	0.14**
Competition for grades	0.05*	0.08**
<i>Intermediate variable</i>		
Meaningfulness of schoolwork	—	0.46**
<i>Control variables</i>		
Gender	0.04	0.08**
Class size	0.01	0.02
Grades	0.16**	0.21**
Parental interest in school	0.28**	0.25**
Support from parents	0.29**	0.27**
Parental monitoring	0.27**	0.33**

* $p < 0.05$; ** $p < 0.01$ (two-tailed).

significant correlation for gender with 'On-task-orientation' reflected a tendency for girls to report more on-task-orientation than boys (see Table 5).

In path analysis all independent variables as well as the intermediate variable showed significant direct associations with 'On-task-orientation'. The highest beta coefficients for associations with 'On-task-orientation' (see Figure 1) were computed for 'Meaningfulness of schoolwork' and 'Teachers' emotional support'. 'Teachers' emotional support' also showed a relatively strong indirect effect on 'On-task-orientation' through effect on 'Meaningfulness of schoolwork'. An almost equally strong indirect association was computed for 'Teachers' academic support'. In addition, the path analysis showed an indirect effect through 'Meaningfulness of schoolwork' on 'On-task-orientation' for 'Student influence', 'Relations with classmates' and 'Competition'. The independent and intermediate variables accounted for 18.7 percent of the variance in 'On-task-orientation', whereas independent variables accounted for a total of 15.6 percent of the variance in 'Meaningfulness of schoolwork'. In addition control variables accounted for 16.0 percent of the variance in 'On-task-orientation' and 13.9 percent of the variance in 'Meaningfulness of schoolwork', respectively.



Coefficients given are beta-coefficients: * $p < 0.05$; ** $p < 0.01$. Note that scores for class size, gender, grades, general support from parents, parental interest and support for schoolwork and parental monitoring were entered as control variables in multiple regressions computed for the path analysis.

Figure 1 Path analysis for associations between factor scores for student's perceptions of learning environment dimensions, scores for the meaningfulness of schoolwork and scores for on-task-orientation.

Discussion

One purpose of this study was to assess students' on-task-orientation. The results showed that a majority of the students reported being on-task-oriented during school lessons. However, there is ground for concern that between 10 and 20 percent of the students reported poor concentration at school. These results support previous findings indicating that students' lack of concentration is a considerable problem (e.g. Dawson, 1980; Nordahl and Sørli, 1998). Students reported higher levels of concentration when they worked individually and with projects or group work than when they were required to listen to teachers' instructions. These results may suggest that to increase on-task-orientation among students, the proportion of lecturing should be reduced, whilst the proportion of teaching methods that include student activity should be increased.

A second purpose of this study was to assess students' perceptions of the meaningfulness of schoolwork. Results from the present study showed that students reported schoolwork as more useful than meaningful, and more meaningful than interesting. Slightly more than half of the students reported their schoolwork to be useful, whereas one in five students reported their schoolwork to be rather uninteresting.

Students' reports on the meaningfulness of schoolwork were significantly correlated with their reports of on-task-orientation. In fact, among variables included as predictors of on-task-orientation, meaningfulness yielded the highest correlation coefficient. In this way, results of the present study support Keller's (1983) assumptions that students' perceptions of the personal meaningfulness of schoolwork are important to their motivation and academic effort. Taken together, the relatively strong association of students' perceptions of the meaningfulness of schoolwork with their on-task-orientation, and the relatively high percentage of students experiencing schoolwork as rather meaningless, indicate that efforts to increase the relevance of school subjects would be an effective way of enhancing on-task-orientation among students.

The main purpose of this study was to explore how learning environment dimensions were related to on-task-orientation, and how these relations were mediated by the students' perceptions of the meaningfulness of schoolwork. Of the learning environment dimensions assessed, teachers' emotional support yielded the strongest association with on-task-orientation as well as with students' perceptions of the meaningfulness of schoolwork (see Figure 1).

These statistical associations suggest that teachers' approval and care for students influence students' perceptions of the meaningfulness of schoolwork as well as their on-task-orientation. Moreover, these findings are in concert with our assumption that teachers' approval and care for students are a cornerstone for the development of positive relations between students and teachers. Such positive relations may in turn increase student willingness to be committed to goals for schoolwork introduced by the teachers, and may also help students to gain insights necessary to discover the meaningfulness of the topics addressed at school.

Distributions of responses to items on 'Teachers' emotional support' would seem to indicate that at least 15 percent of the students were dissatisfied with the emotional support they received from their teachers. Moreover, as many as 35 percent of the students disagreed with the item 'Teachers care for me' on this scale. Taken together, findings from the present study suggest that a relatively large minority of Norwegian 9th grade students may require more emotional support from teachers, and that an increase in the emotional support these students receive, could improve their perceptions of the meaningfulness of schoolwork and their on-task-orientation.

Teachers' academic support may in practice overlap with teachers' emotional support. However, factor analysis indicated that the two kinds of support could be distinguished as two separate learning environment dimensions. Teachers' academic support showed a relatively strong indirect association with on-task-orientation through students' perceived meaningfulness of schoolwork. This indirect association supports the assumptions that academic support from teachers increases students' on-task-orientation by improving students' interests for the subjects. There was also a moderate direct association between students' perceptions of academic support and their reports of on-task-orientation. Considering suggestions from previous research on relations of teachers' instructions with variables similar to on-task-orientation (Atwood, 1983; Evertson and Emmer, 1982), this direct association may reflect that when teachers instruct or explain well and offer students relevant and needed help with their tasks, the students will know how to accomplish school work and therefore be more on-task-oriented. This interpretation of results suggests that one way of improving students' on-task-orientation is for teachers to enhance their academic support for students. However, students' responses to items on teacher support suggest that there is less room for improvement in academic than in emotional support (see Table 3).

Scores for 'Student influence' showed significant direct as well as indirect associations with students' report of on-task-orientation (see Figure 1), thereby supporting previous findings (Firestone and Rosenblum, 1988; Hootstein, 1994). Moreover, the distribution of responses to items on 'Student influence' suggests that quite a few of the students feel they have little influence on school matters (see Table 3), with as many as 33 percent of the students disagreeing with the item 'I feel I can influence my working situation at school' on this scale. Interpreted in light of previous research, these results may well indicate that teachers, in their effort to increase students' on-task-orientation as well as the meaningfulness of schoolwork, should involve the students to a greater degree in decisions concerning school matters. This does not necessarily imply that the teacher should be a less influential leader of the class. On the contrary; clear, democratic and considerate leadership by the teacher is probably a necessary condition to secure all students influence on their working situation at school, and to prevent them from being dominated by other students in the class. This view is supported by the significant positive correlation between students' perceptions of teacher monitoring and student influence in the present study (see Table 4).

The monitoring of students' work and conduct is believed to be of key importance for securing on-task-orientation and preventing disruptive behaviour among students (Doyle, 1980; 1986). This assumption

received only some support in the present study. Results showed a relatively moderate direct association between 'Teachers' monitoring' and 'On-task-orientation', and a non-significant indirect association through 'Meaningfulness of schoolwork'. This may reflect the difficulty in balancing positive forms of monitoring that enhance on-task-orientation, with forms of monitoring that are counterproductive concerning on-task-orientation. However, the positive correlations between scores for teacher support and teacher monitoring suggest that teachers, whom students find supportive, are also active in monitoring students. These findings could reflect that a good way of monitoring is to pay positive and supportive attention to students' schoolwork.

The two remaining learning environment dimensions, 'Relations between classmates' and 'Competition for grades', showed only trivial associations with 'On-task-orientation' (see Figure 1). For competition these results are in concert with our assumption that different aspects of competition for grades may counteract to produce no effect on on-task-orientation. Concerning relations with classmates, the results seem to imply that perceived relations with classmates among Norwegian 9th graders are of little importance for their on-task-orientation. The findings from the present study stand in some contrast to findings from previous studies (Berndt and Keefe, 1992; Ladd, 1990; Schmuck, 1963) that positive relations with classmates are associated with on-task-orientation, and that negative associations with classmates are related to disruptive behaviour among students. However, the relatively little variation in the variable assessing relations with classmates may have affected the possibility of bringing forth this association in the present study.

Implications for practising school psychologists

Results from this study indicate that concentration problems among students may arise as a result of the relations between teachers and students, and in order to improve students' concentration teachers may have to change their behaviour towards students. A challenge for the Educational Psychological Services is to develop methods contributing to necessary changes in the learning environment. For many practising school psychologists, at least in Norway, this is a new way of working.

Adequate measures could have a remedial as well as a preventative focus. In working with students with concentration problems, it is important for the school psychologists, in addition to looking at the student and his or her potentials and needs, also to make a thorough analysis of how the learning environment is arranged and adjusted to the individual student. Results from this study indicate that emotional support and student influence are particularly important to consider. Counselling of teachers on how to create a supportive learning environment, where the students participate to a greater degree in decisions

regarding their working situation at school could be an important measure, remedial as well as preventative. Counselling as a means to improve learning environment necessitates that the school psychologists have thorough knowledge about teaching practises and how teaching can be adapted to the different needs of the students.

Changes in the learning environment imply a focus on the teacher and his or her behaviour in the classroom. This focus could be difficult for the teacher to tackle, and, moreover, advice from the school psychologists may be interpreted as criticism of his or her work performance, and thereby hamper necessary changes of teachers' behaviour. To present advice in a supportive way is therefore a challenge for the school psychologist, and in order to do so the school psychologists may need to improve their counselling skills.

In addition to improving teachers' competence for creating a supportive learning environment, preventative measures would aim at heightening teachers' awareness of the importance of the social-emotional dimensions of the learning environment for students' motivation and on-task-orientation. Another aim would be to stimulate a supportive learning oriented school culture that helps teachers in their continuous development of their competence as teachers. One approach could be to help teachers in their search for own solutions, and to activate tacit knowledge in the teacher group by implementing peer counselling among teachers.

Conclusions

Results from the present study indicate that on-task-orientation is related to students' perceptions of several learning environment dimensions. However, on-task-orientation was primarily related to students' perceptions of teacher support and the possibility for influencing one's schoolwork. On-task-orientation was also related to students' experience of the meaningfulness of schoolwork, and associations of perceptions of teachers' support and influence were partly mediated through this experience. Moreover, results indicate that there is likely to be room for improvement, especially concerning teachers' emotional support of students, students' influence on schoolwork as well as the meaningfulness of schoolwork. It is suggested that efforts to improve teachers' care and approval of students, student influence and the meaningfulness of schoolwork are all particularly relevant means of enhancing student on-task-orientation.

Scores for class size, gender, grades, general support from parents, parental interest and support for schoolwork and parental monitoring were entered as control variables in multiple regressions. Associations of independent variables with students' perceptions of the meaningful-

ness of schoolwork and reports of on-task-orientation are therefore not likely to be reflections of variations in these conditions. However, the present study has a correlational design, and studies with experimental or longitudinal designs are needed to determine if it is possible to enhance on-task-orientation among students by improvement in teacher support of students and student influence, and efforts to make school subjects more appealing to students. To make such improvements possible it may also be necessary to improve support for teachers and to supply better teaching materials.

For practising school psychologists results seem to imply an increased focus on the learning environment, and particularly on the importance of the social-emotional dimensions for students' motivation and on-task-orientation. In order to bring about changes in the learning environment, counselling teachers on how to create a supportive learning environment with student influence could be one important way of approaching this field.

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Appendix 1 *Percentage distribution, mean scores and standard deviations for responses to items included in the scale assessing student influence*

	<i>Disagree strongly</i>	<i>Disagree a little</i>	<i>Agree a little</i>	<i>Agree strongly</i>	M	SD
<i>Student influence</i>						
I feel that I can influence my working situation at school	7.4%	25.2%	55.2%	12.2%	1.72	0.77
The teachers consider my opinions or wishes	8.2%	28.0%	52.5%	11.3%	1.67	0.78
It is sueful to put forward proposals about how things should be in class	10.2%	30.3%	42.3%	17.2%	1.67	0.88
I participate in decisions regarding working methods I shall use	13.7%	38.6%	39.1%	8.6%	1.43	0.83
I participate in decisions regarding choice of my work tasks	17.0%	39.3%	35.7%	8.0%	1.35	0.85

Appendix 2 *Percentage distribution, mean scores and standard deviations for responses to items on approval from teachers*

	<i>Disagree strongly</i>	<i>Disagree a little</i>	<i>Agree a little</i>	<i>Agree strongly</i>	M	SD
<i>Items on approval from teachers</i>						
I feel that teachers have belief in me	6.4%	16.9%	54.5%	22.2%	1.93	0.80
I feel that teachers value me	9.2%	29.3%	50.7%	10.8%	1.63	0.80
The teachers often praise me	10.2%	32.8%	45.4%	11.6%	1.58	0.82
I feel that teachers	36.0%	44.0%	14.6%	5.4%	0.89	0.84