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To what degree do students' coping styles influence this relationship?

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Students' perceptions of learning environment factors and their reports of emotional and behavioural problems. To what degree do students' coping styles influence this relationship?

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Running Head: Learning environment, coping styles and emotional and behavioural problems

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*ABSTRACT. The main aim of this study was to explore associations between students' perceptions of learning environment factors and their reports of emotional and behavioural problems (EBP) and to what degree students' coping styles could influence this relation. The study was conducted as a survey among a representative sample of 2006 Norwegian 9<sup>th</sup> graders. Results showed that students' coping styles accounted for some of the covariance between learning environment factors and EBP. This indicates that associations found between learning environment factors and EBP to some degree could be reflections of students' coping styles, in the way that coping styles affect students' perceptions of the learning environment, or that students' coping styles influence the learning environment. However, two thirds of the covariance between learning environment factors and EBP was not accounted for by individual students' coping styles. The unique effect of learning environment factors on variances in off-task-orientation, externalising problems and emotional problems was 22%, 13% and 4%, respectively.*

Key words: Learning environment, coping styles, emotional and behavioural problems

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## **Introduction**

Emotional and behavioural problems among students seem to have increased in prevalence during recent decades and represent to day a major challenge for schools in Norway, as is the case in schools in other western societies (e.g. Chazan, Laing, & Davies, 1994; Nordahl & Sørli, 1998; West & Sweeting, 2003; Winkley, 1996). Early adolescence represents a crucial time in the development of the individual, and previous research indicates that problem behaviour, for example disruptive behaviour, conduct disorder and dropping out of school as well as emotional problems are increasingly manifest during adolescence (Achenbach et al., 1991; Cohen et al., 1993; Donovan & Jessor, 1985; Dryfoos, 1990; Rutter, 1991; Wold et al., 1995). Several studies suggest that emotional and behavioural problems (EBP) are related to learning environment factors (Bru et al., 1998; Firestone & Rosenblum, 1988; Fraser & Fisher, 1982; Merrett & Wheldall, 1987; Moos, 1979; Short & Shapiro, 1993).

Most of these studies do not, however, differentiate between individual and class or school level effects. Recent studies among adolescent students suggest that students' perceptions of their learning environment, school related stress as well as their behaviour vary considerably more within school classes than between schools or classes (Anderman, 2002; Bru, Stephens, & Torsheim, 2002). Although school or class level variations in perceived learning environment showed significant associations with outcome variables, in these studies the latter were primarily predicted by individual students' perceptions of their learning environment. Individual perceptions are likely to be influenced by individual characteristics as well as the actual environment. The finding that associations between perceived learning

environment and behavioural and emotional outcomes primarily are identified at the individual level may therefore lead to two different assumptions about the mechanism underlying these associations: 1) Individual characteristics, such as coping styles, affect behaviour and emotional responses as well as the perception of the learning environment and the associations between learning environment factors and EBP could thus be spurious, or that students contribute to the creation of their learning environment through the way they cope with stress, and thus affect emotional and behavioural problems indirectly. 2) Students in the same class are treated more or less favourably, generating considerable variations in the quality of learning environment experienced by different students in the same class, and it is this within-class variation in the learning environment that is mainly responsible for learning environment effects upon student behaviour and emotional well being. On the basis of these considerations a main aim of the present study is to investigate to what extent associations between learning environment factors and emotional and behavioural problems could be accounted for by variations in individual student's coping styles.

#### *Learning environment and emotional and behavioural problems*

Another purpose of the present study is to investigate the extent to which different learning environment factors are associated with emotional and behavioural problems. Support and positive relationships, monitoring and influence reflect important experiences that theory and research in the field of child socialization have found to be critical for the healthy development of children: connection, regulation and psychological autonomy, (see for instance Barber, 1997). Based on this perspective, Bear (1998) found the same factors to be important in teacher student relationship. Teachers' support is divided into one instrumental (in our context, academic) dimension and one emotional dimension, based on theories of social support (Wills, 1985). The other two factors, competition for grades and the

meaningfulness of schoolwork, reflect important motivational aspects of the learning environment (Atkinson, 1964; Deci & Ryan, 1992; Eccles, 1983).

Previous research within the field of social support strongly suggests that there is a link between a person's satisfaction with the social support of significant others and one's psychological well being (Dahlgard, Sørensen, & Bjørk, 1991; Williams & House, 1991; Wills, 1985). For our purposes, emotional support includes teachers' approval and expression of care and appreciation. This kind of support is likely to foster positive relationships or connections between teachers and students. According to Hirschi (1969) having a connection to a person or a social system also makes an individual receptive to appropriate norms, thereby increasing the likelihood of positive adaptation. In this way, positive relationships to conventional persons could act as a major deterrent to norm-breaking behaviour. The degree of connection to a teacher is therefore likely to affect the extent to which the teacher is able to influence student behaviour. The findings of several studies indicate that students who feel emotionally supported by their teachers are more likely to experience enjoyment of learning and motivation for academic success and to display on-task behaviour and to have fewer emotional problems (Bru et al., 1998; Fraser & Fisher, 1982; Merrett & Wheldall, 1987; Moos, 1979; Murberg, 2004; Thuen & Bru, 2000). Moreover, research evidence (Eccles, 1983; Thuen & Bru, 2000) indicates that a substantial percentage of students are not satisfied with the emotional support they receive from their teachers, and adolescent students are less satisfied than younger ones.

Teachers' ability to provide students with satisfying academic support is also an important factor in establishing positive relationships with students. When teachers teach well and provide appropriate learning support, students are more likely to succeed instead of becoming frustrated and withdrawing or 'playing up' (Atwood, 1983; Evertson & Emmer, 1982). Academic support helps students to perform well and also to know that they have

performed well, thereby increasing their academic competence. Hirschi (1969) argues that perceived academic competence helps to prevent the development of norm-breaking behaviour, a statement supported by empirical studies indicating that opportunities for students to experience success in school are linked to a low incidence of student misbehaviour (Rutter, Giller, & Hagell, 1998). Finally, previous research evidence (Bru et al., 1998) indicates that lack of academic support in particular could be a risk factor for emotional problems in young adolescents.

Monitoring skills are the third aspect of teacher behaviour considered in our study. Previous research indicates that successful teachers carefully monitor schoolwork and behaviour (Doyle & Carter, 1987; Levin & Nolan, 1996; Mortimore et al., 1988). Doyle (1980) notes that monitoring individual progress can afford opportunities for corrective feedback, and that the close proximity of the teacher to the pupils can prevent misbehaviour from starting. However, monitoring is not always associated with favourable outcomes, especially when it is not combined with supportive teacher behaviour. Control-oriented monitoring can have negative consequences for student motivation and feelings towards school (Fry & Coe, 1980).

Student influence is a learning environment factor that has recently received increasing attention. Research suggests that students who perceive the classroom climate as allowing them a degree of autonomy are more committed and intrinsically motivated and display more on-task-orientation than students who regard the climate as more controlling (Boggiano et al., 1992; Firestone & Rosenblum, 1988; Grolnick & Ryan, 1987; Thuen & Bru, 2000). Previous research also indicates that many students, especially adolescent students, perceive that they have limited influence on school matters (Thuen & Bru, 1999).

Relationships between classmates are also regarded to be an important learning environment factor, and research into peer relationships in general suggests that these are

related to the social and emotional development of children and adolescents (Dunn & McGuire, 1992; Parker & Asher, 1987). Researchers have argued that close and harmonious relationships with peers are related to good social and academic adjustment to school. (Damon, 1984; Furman & Gavin, 1989). Evidence from several studies, (e.g. Berndt & Keefe, 1995; Murberg, 2004) has shown that various types of emotional problems are likely to be associated with negative perceptions of peer relationships.

Relations between competition for grades and EBP are likely to be complex (Deci & Ryan, 1992). On the one hand, competition for grades may contribute to improved motivation by strengthening the incentive value of school subjects. This positive effect of competition will particularly be the case for students who perceive that they are succeeding in school or are doing better than others (Deci & Ryan, 1992). On the other hand, competition can contribute to fear of failure, which is likely to have negative motivational and psychological effects, especially for low achieving students.

Finally, students' perception of the meaningfulness of schoolwork is regarded as an important learning condition affecting students' efforts and motivation (Atkinson, 1964; Eccles, 1983). Previous research has found that a substantial percentage of students in Western countries perceive their schoolwork as boring and of little interest (Goodlad, 1984; Stevenson, 1990; Thuen & Bru, 2000), a perception that is more pronounced among adolescent students than among the younger ones (Eccles & Midgley, 1990; Thuen & Bru, 1999). Evidence from previous research indicates that the perceived relevance of schoolwork is associated with on-task-orientation, increased effort in task fulfilment, and a higher level of student engagement in learning activities (Cennamo & Braunlich, 1996; Mortimore et al., 1988; Stevenson, 1990; Thuen & Bru, 2000). Moreover, Thuen & Bru (2000) found that academic and emotional support from teachers were strong predictors of students' perception of meaningfulness, indicating that students' relationships to their teachers affect their



perceptions of schoolwork. Finally, students who find school subjects of little relevance may perceive school as a worthless institution whose norms one should oppose. Since the teacher is seen as representing this system, he or she may well be the target of such anti-school feelings. This may in turn increase the likelihood of students displaying oppositional behaviour towards teachers.

Previous studies that have demonstrated associations between learning environment factors and EBP, have, however, seldom tested for alternative explanations for these associations, such as the possible influence of individual characteristics on both perceptions of the learning environment and the outcome variables. In the present study the assumption that individual coping styles account for the covariance of learning environment factors with EBP will be tested.

#### *The influence of coping styles on EBP and on experience of the learning environment*

In this study coping refers to cognitive, emotional and behavioural efforts to ameliorate or overcome stressful demands, especially when a more automatic response is not readily available (Lazarus & Folkman, 1984). *Coping styles* reflect an understanding of coping as a disposition or trait focusing on what people *usually* do in stressful situations. This understanding means stability and consistency in coping styles over time and across different stressful situations (Costa, Somerfield, & McCrae, 1996; McCrae & Costa, 1986), and previous research has shown a relatively high degree of stability and consistency in coping among children and adolescents (Aldwin, 1994; Gamble, 1994). Five coping styles are included in the present study: planning, seeking social support, behavioural disengagement (giving in), self-blame and aggressive coping.

Moreover, there is substantial research evidence indicating that coping styles are good predictors of emotional and behavioural problems. Results have generally shown that problem-focused coping, e.g. planning, is associated with positive academic and personal

adjustment, and that emotion-focused coping, e.g. aggressive coping, is associated with emotional and behavioural problems (Ebata & Moos, 1991; Kliwer, Sandler, & Wolchik, 1994; Leong, Bonz, & Zachar, 1997; Seiffe-Krenke, 1995; Tolor & Fehon, 1987). Thuen & Bru (2004) found in a study of 2000 Norwegian 9<sup>th</sup> grade students that emotional problems were associated with much use of self-blame and aggressive coping, that off-task-orientation was associated with little use of planning and frequent use of aggressive coping, and finally, that aggressive coping was the main predictor of externalising problems, with infrequent use of planning and frequent use of behavioural disengagement as other significant predictors.

It is possible that individual students' coping styles could influence students' *perceptions* of the learning environment. Previous findings indicate that individuals who display "acting-out" misbehaviour have an exaggerated tendency to blame others for their problems (Akhtar & Bradley, 1991; Kendall, 1993), and it could therefore be assumed that students who frequently use aggressive coping may perceive the learning environment more negatively. Moreover, students that have a tendency to cope with academic problems by employing behavioural disengagement (giving in) could easily lose interest in schoolwork and perceive it as having little meaning, in contrast to students who confront problems in a more constructive way. An aggressive coping style could also affect students' perception of the meaningfulness of schoolwork, since such coping could indicate an underlying emotional instability and restlessness (Eysenck, 1982; Loeber, 1990; Rutter, Giller, & Hagell, 1998). This situation could make it difficult for students to concentrate on learning tasks to the degree necessary for discovering the meaningfulness of schoolwork.

On the other hand, students' coping styles could also *influence* the learning environment, as relationships with teachers and fellow students, and so affect emotional and behavioural problems indirectly as well. Students that have a tendency to react to problems at school with aggressive responses may easily be met with negative responses from others,

from teachers as well as fellow students. Negative responses from teachers may in turn affect students' behaviour, a situation that could with time lead to a vicious circle affecting negatively both teachers' and students' behaviour. In this way students and their teachers create a shared, unsatisfactory, learning environment (Bugental & Goodnow, 1998).

Moreover, students who cope with academic problems in a constructive way, as the use of planning implies, probably would receive more positive attention and support from teachers than students who have a tendency to give in (use of behavioural disengagement). Previous research indicates that academically motivated students experience more teacher support than the less motivated students who could be met with responses that undermine motivation (Skinner & Belmont, 1993). Finally, students' coping styles may also affect the relationships between students. Previous research has shown that aggressive children are likely to be rejected by their peers (Dodge et al., 2003), and that students who tend to blame themselves for problems are more exposed to the possibility of becoming victims of bullying than other students (Andreou, 2001).

#### *Interactions between coping styles and learning environment factors*

A last aim of the present study is to explore how different coping styles could be associated with different student responses to the same learning environment. Emotions and behaviour are commonly believed to be created by an interaction between individual and environmental factors (see for example Hunt, 1971, 1975; Lazarus & Folkman, 1984). In our study, person – environment interactions would imply that students with different coping styles would show varying responses to the same factors of the learning environment. Experiments designed to test the interaction principle of Hunts' Contemporaneous Matching Model (see Hunt, 1971) have shown, for example, that students low on CL (capable of generating new concepts and holding internal standards) profiting more from a learning environment high on structure and that high CL learners profiting more from low structure

(McLachlan & Hunt, 1973). van Aken et al. (2002) found interactions between children's level of flexibility and the quality of peer relationships, showing that low flexibility combined with problematic peer relationships increased the risk of emotional and behavioural problems. In the same way, different coping styles could be associated with different student responses to the same learning environment. Interactions effects of learning environment factors and students' coping styles in relation to EBP will therefore be investigated.

### *The purpose of the study*

Previous studies (e.g. Bru, et. al. 1998; Bru, Stephens, & Torsheim, 2002; Thuen & Bru, 2000) have demonstrated associations of learning environment factors with emotional and behavioural problems. Recent studies (Anderman, 2002; Bru, Stephens, & Torsheim, 2002) showed that associations of such factors with emotional and behavioural problems were identified primarily at the individual level. The latter findings could indicate that the associations between learning environment factors and emotional and behavioural problems could be a reflection of individual characteristics. Moreover, previous studies have not investigated the possible influence of individual characteristics, such as students' coping styles, on students' perceptions of the learning environment as well as on the association of learning environment factors with emotional and behavioural problems. The unique contributions of the present study is therefore 1) to explore to what degree associations between learning environment factors and emotional and behavioural problems are influenced or accounted for by students' coping styles, as well as, 2) to compare the strength of associations of learning environment factors with emotional as well as behavioural problems.

## Method

### *Subject sample*

This study uses data from a database established in 1998 by Centre for Behavioural Research at University of Stavanger. This database was formed on the basis of a survey among representative samples of Norwegian 5<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> grade students. The present study uses the sample of 9<sup>th</sup> grade students comprising 2006 respondents. The sample of districts and schools is representative according to the Norwegian Central Bureau of Statistics` standard for municipality classification (Norway, 1994). Of the respondents 51% were female while 49% were male students. The response rate was 86%. Respondents completed a questionnaire during a regular 45-minute classroom period with a teacher present. To ensure optimal completion of the questionnaire (including returns from dyslexic students), teachers read out each question aloud. To avoid students influencing each other's responses, the questionnaires were administered, as far as possible, at the same time for each class in each school.

### *Measures*

#### *Emotional and behavioural problems*

*Emotional problems* ( $\alpha=.83$ ) were assessed using seven slightly modified items from the Hopkins Symptom Checklist (Bru et al., 1998; Derogatis et al, 1974; Thuen & Bru, 2004). Items for emotional problems had a four-step scoring format with the following response categories: "No complaints", "Mild complaints", "Moderate complaints" and "Severe complaints". "Feeling blue" is an example of an item included in this scale. *Off-task-orientation* ( $\alpha=.75$ ) and *externalising problems* ( $\alpha=.80$ ) were assessed by two scales developed and documented by our research institute (Bru, Murberg, & Stephens, 2001; Thuen & Bru, 2000; Thuen & Bru, 2004). The scale on off-task-orientation included 4 items

assessing students' attention during instruction and their concentration on work tasks when working individually and during group work, and had a four-step scoring format as follows: "Disagree strongly", "Disagree a little", "Agree a little" and "Agree very much". Finally, externalising problems were assessed on a scale including 5 items with the following response categories: "Never", "Sometimes", "Weekly" and "Daily". Example of an item included in this scale is "Serious quarrelling with teachers". The factor solution for items assessing emotional and behavioural problems, established by a combination of exploratory and confirmatory factor analyses, is documented in previous research (Thuen & Bru, 2004). The factor analyses yielded a factor structure in accordance with the original sub scales.

### *Coping styles*

Coping styles were assessed by five subscales: *Planning* (8 items,  $\alpha=.79$ ), *Social support seeking* (8 items,  $\alpha=.84$ ), *Behavioural disengagement* (4 items,  $\alpha=.64$ ), based on selected scales from The COPE scale (Carver et al., 1989), *Self-blame* (4 items,  $\alpha=.70$ ) (Vitaliano et al., 1985) and *Aggressive coping* (3 items,  $\alpha=.63$ ), derived from a scale developed by (Dise-Lewis, 1988). From this scale two items that were likely to overlap in content with items in the scale on externalising problems were excluded. The dimensionality of items assessing students' coping styles has been tested previously by use of both exploratory and confirmatory factor analyses (Thuen & Bru, 2004). Results from this previous study also support that variables assessing self-blame and aggressive coping could be empirically distinguished from the variables assessing emotional problems and externalising problems, respectively. The present study is based on data from the same database as the 2004-study. However, to avoid statistical problems due to multicollinearity, unlike the previous study implementing oblique rotation, we here implemented varimax rotation to establish uncorrelated factor scores. The number of factors were set in accordance with the previous

factor analyses, and the factor solution based on varimax rotation only differed slightly from the previous one based on oblique rotation, in terms of minor differences in factor loadings. The uncorrelated factor scores for coping styles showed very high correlations with the corresponding correlated factor scores ( $r$ 's ranged from 0.95 through 0.97), indicating that the constructs assessed by correlated and uncorrelated factors were very similar.

The coping scales had a four-step scoring format identical to the one used in the COPE scale: "I usually don't do this at all", "I usually do this a little bit", "I usually do this a medium amount" and "I usually do this a lot", indicating the frequency with which students use the different styles. The introduction to the coping scale was derived from the dispositional version of the COPE scale, and focuses on how students usually cope with social and academic stress at school.

#### *Learning environment factors*

Students' perceptions of the learning environment were assessed by slightly modified scales previously documented (Bru et al., 1998; Bru, Stephens, & Torsheim, 2002; Thuen & Bru, 2000). The scales were constructed to assess students' perceptions of *teachers' emotional support* (9 items,  $\alpha=.85$ ), *teachers' academic support* (5 items,  $\alpha=.84$ ), *teachers' monitoring* (5 items,  $\alpha=.79$ ), *relationships between classmates* (4 items,  $\alpha=.78$ ), *student influence* (4 items,  $\alpha=.77$ ), and *competition for grades* (4 items,  $\alpha=.87$ ). The items assessing learning environment had all a four-step scoring format; 'Disagree strongly', 'Disagree a little', 'Agree a little', and 'Agree very much'. The factor solution for items assessing learning environment factors, established by a combination of exploratory and confirmatory factor analyses, is documented in previous research (Bru, Stephens, & Torsheim, 2002; Thuen & Bru, 2000). The six-factor solution was in accordance with the expected sub scales of the implemented learning environment instrument. To avoid statistical problems due to multicollinearity, a new factor analysis implementing varimax rotation were conducted also for

the assessment of learning environment factors. As for coping styles, the number of factors was set in accordance with the previous factor analyses, and the new analysis yielded a factor solution very similar to the previous ones implementing oblique rotation. The uncorrelated learning environment factor scores showed very high correlations with the corresponding correlated factor scores ( $r$ 's ranged from 0.93 through 0.98), indicating that the constructs assessed by correlated and uncorrelated factors were very similar.

### *Meaningfulness of schoolwork*

A semantic differential scale that included three items on how useful, meaningful and interesting students find schoolwork assessed students' perceptions of the meaningfulness of schoolwork. The scale was developed by our research institute and has been documented in previous research (Bru, 2006; Thuen & Bru, 2000). Factor analysis of items included in this scale yielded a one-factor solution. The scale's Cronbach alpha was .79.

### *Procedures*

The selected statistical tools were product-moment-correlations, exploratory factor analysis, variance component analysis and multivariate GLM analysis. Statistical analyses were conducted using SPSS (Norusis, 2000). Scores for externalising problems showed a skewed distribution and were therefore transformed by the  $\log_{10}$  logarithmic function before entering the regression analyses. Skewness and kurtosis after transformation were 1.65 and 3.33, respectively. GLM analysis was chosen because this approach allows for conducting analyses for several dependent variables simultaneously and thus the estimation of multivariate associations between the independent and all the dependent variables. The GLM gives partial Eta as the measure of effect-size. An explanation of the partial Eta is given in the note to table I. In GLM analyses factor scores were implemented as measures of learning environment factors, coping styles and emotional and behavioural problems. Preliminary



analyses using correlated factor scores for independent variables indicated statistical problems due to multicollinearity. To avoid this problem uncorrelated factor scores were constructed and implemented for independent variables.

Results from variance component analysis showed that the class level variance components for variables assessing emotional and behavioural problems were moderate (off-task orientation, 5.1%, externalizing problems 4.1%, and, emotional problems 1.3%). A uni-level approach to analysis was therefore considered appropriate.

This study represents partly re-analyses of data presented previously. Thuen & Bru (2000) presented the uni-level relationship between learning environment factors and off-task orientation, whereas Bru, Stephens & Torsheim (2002) presented multi-level associations of the learning environment factors with off-task-orientation, conflicts with teachers, and the bullying of peers. Thuen & Bru (2004) presented results of associations of coping styles with the outcome variables implemented in this study. The present study combines coping styles and learning environment factors as independent variables and off-task-orientation, externalising problems and emotional problems as dependent variables, in an attempt to explore to what degree associations between learning environment factors and emotional and behavioural problems are influenced or accounted for by individual students' characteristics such as coping styles.

## **Results**

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Insert Table I about here  
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The results of the multivariate GLM analyses showed several significant associations between coping styles and learning environment factors, most of them, however, relatively weak (see table I). The coping styles “Planning”, “Aggressive coping” and “Behavioural disengagement” showed the strongest multivariate associations with the learning environment factors. High scores for “Planning” were generally associated with more positive reports of the learning environment, especially more perceived emotional support from teachers, more influence and more perceived meaningfulness of schoolwork. “Aggressive coping”, on the other hand, was as generally associated with a more negative perception of the learning environment, less perceived support from teachers, poorer relationships with classmates and less perceived meaningfulness of schoolwork. In addition, there was a tendency for students scoring high on “Aggressive coping” to perceive the learning environment as more competitive. Finally, ‘Behavioural disengagement’ was associated with less perceived emotional support from teachers and less perceived meaningfulness of schoolwork.

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Insert Table II about here

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Insert Table III about here

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The results of the multivariate GLM analyses (see table II and table III) showed that almost all variables assessing learning environment factors, including the meaningfulness of schoolwork, accounted for a unique and significant variance in EBP-variables. Perceived emotional support and meaningfulness of schoolwork showed the strongest overall

associations with EPB and there was a tendency for learning environment factors to show the strongest associations with “Off-task orientation”, the medium associations with “Externalizing problems” and the weakest associations with “Emotional problems”

The unique effect of the learning environment factors on the variance in “Emotional problems”, “Off-task-orientation” and “Externalising problems” were 4%, 22% and 13%, respectively. After controlling for coping styles, the analysis of multivariate associations of the learning environment factors with the three dependent variables yielded a multivariate squared multiple R of 0.26. All independent variables accounted for 29% of the variance in “Emotional problems”, 37% in “Off-task-orientation” and 33% in “Externalising problems”. The multivariate effect of all independent variables in all dependent variables was 66%.

Among the different coping styles included, results showed that “Aggressive coping” and “Self-blame” had the strongest associations with EPB. High scores for “Aggressive coping” were strongly associated with high scores for “Externalising problems” as well as “Emotional problems”. “Emotional problems” were also strongly associated with “Self-blame”, with a weaker association with “Behavioural disengagement”. “Off-task-orientation” was moderately associated with “Aggressive coping” and “Planning”.

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Insert Table IV about here  
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Results showed significant correlations between the learning environment factors (see table IV). The strongest correlations were computed between scores of ‘ Teachers’ emotional support’ and scores of ‘Teachers academic support’ and ‘ Student influence’.

## Discussion

Recent studies among adolescent students (Anderman, 2002; Bru, Stephens, & Torsheim, 2002) have shown that associations between perceived learning environment and emotional and behavioural problems are primarily identified at the individual level. These results may indicate that associations between the learning environment and EBP at least to some degree are reflections of student characteristics, such as students' coping style. The main aim of the study was therefore to explore associations between learning environment factors and EBP and to what degree these associations could be influenced or accounted for by students' coping styles.

### *Associations of learning environment factors with EBP, when controlling for students' coping styles*

Results showed when controlling for students' coping styles, that the learning environment factors still accounted for a substantial amount of variance in dependent variables. Even though results indicate an overlap between variance accounted for by learning environment factors and coping styles, about two thirds of the total variance accounted for in EBP by learning environment factors, could be ascribed solely to these factors. Together with the previous findings of associations between learning environment factors and EBP at the individual level (Anderman, 2002; Bru, Stephens, & Torsheim, 2002), these results suggest that students in the same class are treated differently and that this within class variation in learning environment is associated with emotional and behavioural difficulties.

The learning environment factors showed the strongest associations with off-task-orientation and the weakest associations with emotional problems: The unique effect of learning environment factors on variances in off-task-orientation, externalising problems and emotional problems were 22%, 13% and 4%, respectively. Of the dependent variables, off-task-orientation is the variable most closely connected to learning activities. It is therefore not

surprising that this variable showed the strongest associations with the learning environment factors. Externalising problems, on the other hand, may to a stronger degree be related to other factors in the school environment, such as social factors not directly related to learning activities. These have not been included in the present study. Attitudes among peers concerning how to behave towards adults could provide one example of this. Relationships with peers at school probably also play an important role for emotional problems. It is, however, possible that the variables included in this study did not grasp the different aspects of relationships to a sufficient degree. Finally, it is possible the weak associations between learning environment factors and emotional problems may indicate that teachers do not to sufficient degree possess the competence needed to support students with emotional problems in a way that could prevent or reduce such problems.

Among the different learning environment factors included, emotional support from teachers and students' perception of the meaningfulness of schoolwork yielded the strongest multivariate association with the dependent variables. The significant associations of off-task-orientation and externalising problems with the meaningfulness of schoolwork are in accordance with previous research indicating associations between the relevance of schoolwork and on-task-orientation, students' efforts and student engagement in learning activities ( Cennamo & Braunlich, 1996; Mortimore et al., 1988; Stevenson, 1990; Thuen & Bru, 2000), and the assumption that students who find schoolwork of little interest may perceive school as a worthless institution whose norms one should oppose. Since the teacher is regarded as a representative of the system, he or she may well become the target of such anti-school feelings, which in turn could increase the likelihood of students displaying oppositional behaviour towards teachers. The unique effect of the perceived meaningfulness suggests that the *content* of school subjects should be taken into account when seeking to find measures to reduce behavioural problems.

Off-task-orientation and externalising problems were also relatively strongly associated with teachers' emotional support. This result is in line with previous research emphasizing the significance of good relationships between teachers and students in order to prevent and/or reduce problem behaviour ( Bru et al., 1998; Fraser & Fisher, 1982; Merrett & Wheldall, 1987; Moos, 1979; Murberg, 2004; Thuen & Bru, 2000). However, it is noteworthy that students' perception of emotional support from teachers was significantly and positively correlated to other learning environment factors. This suggests that academic support, allowing for student influence and effective monitoring are likely to be important aspects of a supportive and caring learning environment that could prevent and reduce problem behaviour. Consequently, results are in accordance with previous research indicating that emotional support together with an academic focus and clear guidance ( Atwood, 1983; Evertson & Emmer, 1982), a carefully monitoring of schoolwork and behaviour (Doyle & Carter, 1987; Levin & Nolan, 1996; Mortimore et al., 1988), and an opportunity for students to influence their learning activities (Boggiano et al., 1992; Firestone & Rosenblum, 1988; Thuen & Bru, 2000), seem to prevent or reduce behavioural problems. The modest unique variance in problem behaviour accounted for by teacher monitoring may reflect the difficulty in balancing positive forms of monitoring that enhance concentration and prevent negative behaviour, with forms of monitoring that are counterproductive with regard to the same variables. These results also underline the fact that effective monitoring must be based on good relationships between teachers and students.

In line with previous research (Berndt & Keefe, 1995; Murberg, 2004), emotional problems were significantly associated with relationships between classmates. Results indicate that poor relationships with peers at school primarily represent a risk factor for the development of emotional problems. Teachers ensuring positive relationships between classmates may prove valuable in reducing emotional problems. The very modest unique

association between emotional support from teachers and emotional problems was somewhat unexpected and stands in some contrast to previous research (Bru et al., 1998; Murberg, 2004). However, there is some support in our data that teacher support may influence emotional problems indirectly by influencing relationships between classmates.

Results showed that the learning environment factors accounted for a substantial amount of variance in emotional and behavioural problems, after controlling for students' coping styles. Together with the previous findings of associations between learning environment factors and EBP at the individual level (Anderman, 2002; Bru, Stephens, & Torsheim, 2002), and results of variance component analysis showing that class level variance components for variables assessing emotional and behavioural problems were moderate, from 1,3 to 5,1 percent, these results might indicate that teachers treat students within the same class differently and thereby generate considerable variations in the quality of the learning environment experienced by different students in the same class, and that this variation in 'individual' learning climate contributes to variations in EBP.

#### *Coping styles and the individual student's learning environment*

About a third of the variance learning environment factors accounted for in emotional and behavioural problems was also accounted for by coping styles. This finding may indicate that individual characteristics (here coping styles) that effect EBP may also effect students' *perceptions* of the environment. This gives some support to the assumption that the association between learning environment factors and EBP could be spurious. The significant associations found between aggressive coping and measures of the learning environment factors are likely to support the notion that students with aggressive tendencies are likely to perceive the learning environment more negatively due to an inclination to attribute the causes of, for example failures, to external sources (Akhtar & Bradley, 1991; Kendall, 1993). An

aggressive coping style could also indicate an underlying emotional instability and restlessness (Eysneck, 1982; Loeber, 1990; Kazdin, 1995; Rutter, Giller, & Hagell, 1998). Such conditions could make it difficult for students to sufficiently concentrate on their learning tasks so as to discover the meaningfulness of the subject. The negative association found between aggressive coping and perception of the meaningfulness of schoolwork supports this assumption.

On the other hand, the common variance between learning environment factors and coping styles may also reflect the fact that students through their ways of coping with problems at school *influence* or contribute to the shaping of the learning environment they meet (Scarr, 1992; Scarr & McCartney, 1983). The significant negative associations of aggressive coping with all learning environment factors (except competition for grades) are in concert with previous research indicating that students with aggressive responses may easily be met with negative responses from others, teachers as well as students (Dodge et al., 2003; Pace et al., 1999; Poulou & Brahm, 2000). The negative associations with emotional and academic support from teachers support our notion that students with an aggressive coping style receive less support from teachers.

Moreover, the significant associations of emotional support from teachers with planning (positive correlation) and behavioural disengagement (negative correlation), are in accordance with results from previous research suggesting that academically motivated students experience more teacher support than less motivated students (Skinner & Belmont, 1993). Furthermore, results showed that the strongest association was computed between planning and the meaningfulness of schoolwork, with a weaker association found between behavioural disengagement and the meaningfulness of schoolwork. These results may reflect the fact that students who find schoolwork of little interest are the least involved. However, the use of behavioural disengagement could also reduce the possibility of discovering the



interesting sides of the schoolwork. On the other hand, to deal with academic problems in an active, constructive way would lead to greater interest in schoolwork.

#### *Interactions between learning environment factors and coping styles*

Results of regression analyses showed only a few significant, weak, interactions between coping styles and learning environment factors. There was a tendency for a stronger association between relationships with classmates and emotional problems among students reporting frequent use of planning, suggesting that for these students relationships with classmates are more important in order to prevent or reduce emotional problems. With regard to externalising problems the analyses revealed a stronger negative association with student influence for students reporting lower than mean on planning, suggesting that for these students the possibilities of influencing their schoolwork is more important. This result is perhaps somewhat unexpected, and further research is therefore needed. There was also a tendency for a stronger, negative, association between competition for grades and externalising problems for students with scores on self-blame lower than mean. This could indicate that competition for grades could be positive in reducing or preventing externalising problems for students who to a small degree blame themselves for problems.

It was somewhat unexpected that results showed so few significant interactions. One explanation could be that the variations in learning environment may not be great enough to compensate for students' individual coping styles. Further research with other approaches is needed. For example could experimental or quasi-experimental designs where the learning environment is subjected to change, and in which coping styles are measured at pre-intervention, allow for the investigation of how changes in the learning environment affect students dependent on their coping styles.

#### *Conclusions*

Results from the present study showed that individual coping styles accounted for some of the covariance between learning environment factors and EBP. This indicates that associations found between learning environment factors and EBP to some degree could be reflections of students' coping styles, in the way that coping styles affect students' *perceptions* of the learning environment, or that students through their way of coping with problems at school *influence* or contribute to the creation of the learning environment. However, two thirds of the covariance between learning environment factors and EBP was not accounted for by individual students' coping styles. This finding supports the alternative assumption that students in the same class are exposed to different learning environments and that the variations in this 'individual' learning environment contributes to variations in EBP.

#### *Methodological limitations*

Some methodological limitations to this research must be owned up to. The data are based on self-reports that may have been subjected to a reporting bias. Moreover, the instruments assessing off-task-orientation and externalising problems are related to the school context, while emotional problems are measured in a general way. This may have affected the amount of variance in EPB accounted for by the independent variables. For further research, a context - specific approach to the assessment of emotional problems could prove beneficial. Other individual factors capable of generating spurious associations between learning environment factors and EBP ought to be included as covariates in further research, for example measures of performance anxiety, motivational styles or learning strategies. A broader approach to relationships with peers, including exposure to bullying and perceptions of peer group norms could also be included in further research as learning environment factors. Finally, the present study is a survey design and caution must therefore be exercised in making causal statements between learning environment factors and EBP. Other research designs, such as prospective or quasi-experimental designs, are recommended in order to

investigate more closely the complex interplay between students' individual characteristics and the learning environment he or she experiences and their effects on emotional and behavioural problems.

## References

- Achenbach, T. M., Howell, C. T., Quay, H. C., & Conners, C. K. (1991). *National Survey of problems and competencies among four to sixteen year olds*. (Vol. 56).
- Akhtar, N., & Bradley, E. J. (1991). Social information processing deficits of aggressive children: present findings and implications for social skills training. *Clinical Psychology Review, 11*, 621-644.
- Aldwin, C. M. (1994). *Stress, Coping and Development: An Integrative Perspective*. New York: Guilford Press.
- Anderman, E. (2002). School Effects on Psychological Outcomes During Adolescence. *Journal of Educational Psychology, 94*, 795-808.
- Andreou, E. (2001). Bully/Victim Problems and their Association with Coping Behaviour in Conflictual Peer Interactions Among School-age Children. *Educational Psychology, 21*, 59-66.
- Atkinson, J. W. (1964). *An introduction to motivation*. New York: Van Nostrand.
- Atwood, R. (1983). *The interacting effects of task form and activity structure on students' task involvement and teacher evaluations*. Paper presented at the Annual meeting of the American educational research association; Montreal.
- Barber, B. K. (1997). Adolescent socialization in context - the role of connection, regulation and autonomy in the family. *Journal of Adolescent Research, 12*, 5-11.

- Bear, G.G. (1998). School discipline in the United States: Prevention, correlation and long-term social development. *School Psychology Review*, 27, 14-32.
- Berndt, T. J., & Keefe, K. (1995). Friend's influence on adolescents' adjustment to school. *Child Development* 66, 1312-1329.
- Boggiano, A. K., Shields, A., Barrett, M., Kellam, T., Thompson, E., & Simons, J.(1992). Helplessness deficits in students: the role of motivational orientation. *Motivation and Emotion*, 16, 271-296.
- Bru, E., Boyesen, M., Munthe, E., & Roland, E. (1998). Perceived Social Support at School and Emotional and Musculoskeletal Complaints among Norwegian 8th Grade Students. *Scandinavian Journal of Educational Research*, 42, 339-356.
- Bru, E., Murberg, T. A., & Stephens, P. (2001). Social support, negative life events and pupil misbehaviour among young Norwegian adolescents. *Journal of Adolescence*, 24, 715-727.
- Bru, E., Stephens, P., & Torsheim, T. (2002). Students' perceptions of teachers' class management styles and their report of misbehaviour. *Journal of School Psychology*, 40, 287-307.
- Bru, E. (2006). Factors associated with disruptive behaviour in the classroom. *Scandinavian Journal of Educational Reseach*, 50, 23-43.
- Bugental, D. B., & Goodnow, J. J. (1998). Socialization Processes. In W. Damon & N. Eisenberg (Eds.), *Handbook of Child Psychology. Fifth edition* (Vol. 3: Social, Emotional, and Personality Development). New York: John Wiley & Sons, Inc.
- Carver, C.S., Scheier, M.F., & Weintraub, J.K. (1989). Assessing Coping Strategies: A Theoretically Based Approach. *Journal of Personality and Social Psychology*, 2, 267-283.

- Cennamo, K., & Braunlich, E. (1996). *The Effects of Meaningfulness of schoolwork on Mental Effort*. Paper presented at the National Convention of Association for Educational Communications and Technology (18 th. Indianapolis, IN).
- Chazan, M., Laing, A. F., & Davies, D. (1994). *Emotional and Behavioural Difficulties in Middle Childhood: Identification, Assessment and Intervention in School*. London & Washington, D.C: The Falmer Press.
- Cohen, P., Cohen, J., Kasen, S., Velez, C. N., Hartmark, C., & Johnson, J. (1993). An epidemiological study of disorders in late childhood and adolescence. Age- and Gender-Specific Prevalence. *Journal of Child Psychology and Psychiatry*, 34, 851-867.
- Costa, P., Somerfield, M.R., & McCrae, R. (1996). Personality and coping: A reconceptualization. In N. S. Endler & M. Zeidner (Eds.), *Handbook of coping: Theory, research, applications*. Oxford, England: John Wiley & Sons.
- Dahlgard, O. S., Sørensen, T., & Bjørk, S. (1991). Community psychiatry and health promotion research. In B. Badura & I. Kickbusch (Eds.), *Health Promotion Research, WHO Regional Publications no. 37*. Copenhagen: WHO.
- Damon, W. (1984). Peer education: The untapped potential. *Journal of Applied Developmental Psychology*, 5, 331-343.
- Deci, E. L., & Ryan, R. M. (1992). The initiation and regulation of intrinsically motivated learning and achievement. In T. S. Pittman & A. Boggiano (Eds.), *Achievement and motivation. A social-developmental perspective*. New York: Cambridge University Press.
- Derogatis, L. R., Lempman, R. S., Rickels, K., Uhlenhuth, E. H., & Covi, L. (1974). The Hopkins Symptom Checklist: a self report inventory. *Behavioral Science*, 19, 1-5.

- Dise-Lewis, J. E. (1988). The Life Events and Coping Inventory: An assessment of stress in children. *Psychosomatic Medicine*, *50*, 484-499.
- Dodge, K. A., Lansford, J. E., Burks, V. S., Bates, J. E., Pettit, G. S., & Fontaine, R. (2003). Peer Rejection and Social Information-Processing Factors in the Development of Aggressive Behavior Problems in Children. *Child Development*, *74*, 374-393.
- Donovan, J. E., & Jessor, R. (1985). Structure of Problem Behavior in Adolescence Young Adulthood. *Journal of Consulting and Clinical Psychology*, *53*, 890-904.
- Doyle, W. (1980). *Classroom management*. West Lafayette, IN: Kappa Delta Pi.
- Doyle, W., & Carter, K. (1987). How order is achieved in the classroom. In N. Hastings & J. Schwieso (Eds.), *New directions in educational psychology, vol 2*. London: Falmer Press.
- Dryfoos, J. G. (1990). *Adolescents at risk: Prevalence and prevention*. Oxford: Oxford University Press.
- Dunn, J., & McGuire, S. (1992). Siblings and peer relations in childhood. *Journal of Child Psychology and Psychiatry*, *33*, 67-105.
- Ebata, A. T., & Moos, R. H. (1991). Coping and adjustment in distress and healthy adolescents. *Journal of Applied Developmental Psychology*, *17*, 33-54.
- Eccles, J. S. (1983). Expectancies, values, and academic behaviour. In J. T. SPENCE (Ed.), *Achievement and achievement motives: Psychological approaches*. San Francisco: Freeman.
- Eccles, J. S., & Midgley, C. (1990). Changes in academic motivation and self-perceptions during early adolescence. In R. Montemayor, G. R. Adams & T. P. Gullotta (Eds.), *Advances in adolescent development: From childhood to adolescence* (Vol. 2). Newbury Park: CA: Sage.

- Evertson, C. M., & Emmer, E. T. (1982). Effective management at the beginning of the year in junior high classes. *Journal of Educational Psychology, 4*, 485-495.
- Eysenck, H. J. (1982). *Personality genetics and behavior*. New York: Praeger.
- Firestone, W., & Rosenblum, S. (1988). *The alienation and commitment of students and teachers in urban high schools*. Washington, DC: Rutgers University and Office of Educational Research and Improvement.
- Fraser, B. J., & Fisher, D. L. (1982). Predicting students' outcomes from their perceptions of classroom psychosocial environment. *American Educational Research Journal, 19*, 498-518.
- Fry, P. S., & Coe, K. J. (1980). Interaction among dimensions of academic motivation and classroom social climate: a study of the perceptions of junior high and high school pupils. *British Journal of Educational Psychology, 50*, 33-42.
- Furman, W., & gavin, L. A. (1989). Peer's influence and adjustment and development: A view from intervention. In T. J. Berndt & G. W. Ladd (Eds.), *Peer relationships in child development*. New York: Wiley.
- Gamble, W. C. (1994). Perceptions of controllability and other stressor event characteristic as determinants of coping among adolescents and young adults. *Journal of Youth and Adolescence, 23*, 65-84.
- Goodlad, J. I. (1984). *A place called school: prospects for the future*. New York: McGraw-Hill.
- Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: an experimental and individual difference investigation. *Journal of Personality and Social Psychology, 52*, 890-898.
- Hirschi, T. (1969). *Causes of delinquency*. Berkeley: University of California Press.

- Hunt, D. E. (1971). *Matching models in education: The coordination of teaching methods with student characteristics*. Toronto: Ontario Institute for Studies in Education.
- Hunt, D. E. (1975). Person-Environment Interaction: A Challenge Found Wanting Before It Was Tried. *Review of Educational Research*, 45, 209-230.
- Kazdin, A.E. (1995). Child, parent, and family dysfunction as predictors of outcome in cognitive-behavioral treatment of antisocial children. *Behavior Research and Therapy*, 33, 271-281.
- Kendall, P. C. (1993). Cognitive-behavioral therapies with youth: guiding theory, current status, and emerging developments. *Journal of Consulting and Clinical Psychology*, 61, 235-247.
- Kliewer, W., Sandler, I., & Wolchik, S. (1994). Family socialization of threat appraisal and coping: Coaching, modelling, and family context. In F. Nesmann & K. Hurrelman (Eds.), *Social networks and social support in childhood and adolescence*. New York: Walter de Gruyter.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer Publishing Company.
- Leong, F. T. L., Bonz, M. H., & Zachar, P. (1997). Coping styles as predictors of college adjustment among freshmen. *Counselling Psychology Quarterly*, 10, 211-220.
- Levin, J., & Nolan, J. (1996). *Principles of classroom management*. Boston: Allyn & Bacon.
- Loeber, R. (1990). Disruptive and antisocial behavior in childhood and adolescence: Development and risk factors. In K. H. LØSEL (Ed.), *Health hazards in adolescence*. Berlin: Walter de Gruyter.
- McLachlan, J. F., & Hunt, D. E. (1973). Differential effects of discovery learning as a function of conceptual level. *Canadian Journal of Behavioural Science*, 5, 152-160.



- Merrett, F., & Wheldall, K. (1987). Natural rates of teacher approval and disapproval in British primary and middle school classrooms. *British Journal of Educational Psychology*, 57, 95-103.
- Moos, R. H. (1979). *Evaluating educational environments*. San Francisco: Jossey-Bass.
- Mortimore, P., Sammons, P., Stoll, L., Lewis, D., & Ecob, R. (1988). *School matters: the junior years*. Wells: Open Books.
- Murberg, T. A. (2004). Social Support, Negative Life Events and Emotional Problems among Norwegian Adolescents. *School Psychology International*, 25, 387-404.
- Nordahl, T. & Sørli, M. (1998). *Problematferd i skolen. Hovedfunn, forklaringer og pedagogiske implikasjoner. [Emotional and behavioural problems in school. Results, discussion and practical implications; in Norwegian]*.Oslo: NOVA.
- Norway, S. (1994). *Standard Classification of Municipalities 1994*. Oslo: Statistics Norway.
- Pace, T. M., Mullins, L. L., Beesley, D., Hill, J. S., & Carson, K. (1999). The Relationship between Children's Emotional and Behavioral Problems and Social Responses of Elementary School Teachers. *Contemporary Educational Research*, 24, 140-155.
- Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: are low accepted children at risk? *Psychological Bulletin*, 102, 357-389.
- Poulou, M., & Brahm, N. (2000). Teachers' causal attributions, cognitive, emotional and behavioural responses to students with emotional and behavioural difficulties. *British Journal of Educational Psychology*, 70, 559-581.
- Rutter, M. (1991). Services for children with emotional disorders: needs, accomplishments and future development. *Young Minds Newsletter*, 7(3).
- Rutter, M., Giller, H., & Hagell, A. (1998). *Antisocial behaviour by young people*. Cambridge: Cambridge University Press.

- Scarr, S. (1992). Developmental theories for the 1990s: Development and individual differences. *Child Development, 63*, 1-19.
- Scarr, S., & McCartney, K. (1983). How people make their own environment: A theory of genotype - environmental effects. *Child Development, 54*, 424-435.
- Seiffe-Krenke, I. (1995). *Stress, Coping, and Relationships in Adolescence*. New York: Erlbaum, Hillsdale.
- Skinner, E. A., & Belmont, M. J. (1993). Motivation in the Classroom: Reciprocal Effects of Teacher Behavior and Student Engagement Across the School Year. *Journal of Educational Psychology, 85*, 571-581.
- Stevenson, R. B. (1990). Engagement and Cognitive Challenge in Thoughtful Social Studies Classes: A Study of Student Perspectives. *Journal of Curriculum Studies, 4*, 329-341.
- Thuen, E., & Bru, E. (1999). *Læringsmiljø og konsentrasjon blant elever i 6. og 9. klasse. [Learning environment and on-task-orientation among 6th and 9th grade students; in Norwegian]*. Stavanger: Stavanger University College, Centre for Behavioural Research.
- Thuen, E., & Bru, E. (2000). Learning environment, meaningfulness of schoolwork and on-task-orientation among Norwegian 9th grade students. *School Psychology International, 21*, 393-413.
- Thuen, E., & Bru, E. (2004). Coping styles and emotional and behavioural problems among Norwegian 9th grade students. *Scandinavian Journal of Educational Research, 48*, 493-510.
- Tolor, A., & Fehon, D. (1987). Coping with Stress: A Study of male Adolescents' Coping Strategies as Related to Adjustment. *Journal of Adolescent Research, 1*, 33-42.
- Van Aken, M. A. G., Van Lieshout, C. F. M., Scholte, R. H. J., & Haselager, G. J. T. (2002). Personality types in childhood and adolescence: Main effects and person-relationship

- transactions. In L. Pulkkinen & C. Avshalom (Eds.), *Paths to successful development: Personality in the life course* (pp. 129-156). New York: Cambridge University Press.
- Vitaliano, P. P., Russo, J., Carr, J. E., Maiuro, R., & Becker, J. (1985). The Ways of Coping Checklist: Revision and psychometric properties. *Multivariate Behavioral Research*, 20s, 3-26.
- West, P., & Sweeting, H. (2003). Fifteen, female and stressed: Changing patterns of psychosocial distress over time. *Journal of Child Psychology and Psychiatry*, 44, 399-411.
- Williams, D. R., & House, J. S. (1991). Stress, social support, control and coping: a social epidemiological view. In B. Badura & I. Kickbusch (Eds.), *Health Promotion Research, WHO Regional Publication no. 37*. Copenhagen: WHO.
- Wills, T. A. (1985). Supportive functions of interpersonal relations. In S. Cohen & L. Syme (Eds.), *Social support and health*. Orlando: Academic Press.
- Winkley, L. (1996). *Emotional Problems in Children and Young People*. London & New York: Cassell.
- Wold, B., Aasen, H., Aarø, L. E., & Samdal, O. (1995). *Helse og livsstil blant barn og unge [Health and lifestyle among children and adolescent; in Norwegian]*. Hemil-rapport nr 14-1995. Bergen: University of Bergen.

## TABLES

**Table I.** Results of multivariate GLM (Partial Eta) for associations between coping styles and learning environment factors

	Multivariate	Teachers` emotional support	Teachers` academic support	Teachers` monitoring	Student influence	Relationships Between classmates	Competition for grades	Meaningful- ness of schoolwork
Gender	0.15**	0.05*	0.01	0.04*	0.02	0.03	0.13**	0.01
Seeking social support	0.14**	0.10**	0.02	0.02	0.07**	0.02	-0.02	0.09**
Planning	0.29**	0.15**	0.04	0.06*	0.14**	0.03	0.04**	0.26**
Self-blame	0.08*	-0.03	0.04	0.04	-0.02	-0.01	0.05*	0.02
Behavioural disengagement	0.22**	-0.18**	0.01	0.04	0.01	-0.04*	0.01	-0.15**
Aggressive coping	0.29**	-0.15**	-0.12**	-0.10**	-0.06*	-0.10**	0.13**	-0.19**
R squared (gender and coping)	0.27	0.10	0.02	0.02	0.03	0.02	0.04	0.14
R squared (coping)	0.25							

\*\* p<0.01, \*p<0.05

Partial Eta is the correlation ratio, also called the *coefficient of nonlinear partial correlation*. Partial E-squared, gives the percent of variance in the dependent variable accounted for by the variance between categories (groups) formed by the independent variable. When the association is linear, the partial Eta is analogous with the partial correlation coefficient. The multivariate partial Eta is an expression for the nonlinear partial multiple correlation of one independent variable with all dependents variables, controlled for the other independent variables.

**Table II.** Results from multivariate GLM (Partial Eta) for associations between learning environment factors, coping styles and emotional and behavioural problems

	Multivariate		Emotional problems		Off-task-orientation		Externalising problems	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Gender	0.34**	0.32**	0.20**	-0.11**	-0.10**	-0.12**	-0.22**	-0.27**
<i>Learning environment factors</i>								
Teacher' emotional support	0.33**	0.29**	-0.10**	-0.05*	-0.28**	-0.25**	-0.26**	-0.23**
Teacher' academic support	0.21**	0.21**	-0.10**	-0.10**	-0.16**	-0.15**	-0.18**	-0.17**
Teacher' monitoring	0.16**	0.15**	-0.05*	-0.05*	-0.15**	-0.14**	-0.10**	-0.08**
Student influence	0.13**	0.12**	-0.03	-0.03	-0.13**	-0.11**	-0.05*	-0.05*
Relationships between classmates	0.20**	0.17**	-0.16**	-0.14**	-0.13**	-0.11**	-0.07**	-0.04
Competition for grades	0.14**	0.11**	0.11**	0.05*	-0.07**	-0.09**	-0.00	-0.05*
Meaningfulness of school work	0.31**	0.28**	-0.10**	-0.08**	-0.30**	-0.26**	-0.19**	-0.16**
<i>Coping styles</i>								
Seeking social support		0.13**		-0.05*		0.05*		0.13**
Planning		0.16**		-0.10**		-0.13**		-0.01
Self-blame		0.29**		0.28**		0.02		0.00
Behavioural disengagement		0.15**		0.13**		0.08**		0.08**
Aggressive coping		0.35**		0.27**		0.14**		0.28**
<i>Interaction terms</i>								
Planning x student influence								0.07**
Self-blame x competition for grades		0.08**						0.07**
Planning x relationships between classmates		0.09**		0.07**				

Model 1 included variables assessing gender and perceived learning environment.

Model 2 included variables assessing gender, perceived learning environment and coping styles

Note that only interactions significant at the 0.01 level are given.

**Table III.** Variance accounted for in dependent variables

	Multivariate	Emotional problems	Off-task-orientation	Externalising problems
Multiple R <sup>2</sup> of gender, learning environment factors and coping styles	0.66	0.29	0.37	0.33
Unique effect (R <sup>2</sup> change) of learning environment factors, controlled for gender	0.39	0.09	0.33	0.21
Unique effect (R <sup>2</sup> change) of learning environment factors, controlled for gender and coping styles	0.26	0.04	0.22	0.13

**Table IV.** Pearson product moment coefficients for correlations of scores for learning environment factors

	Teachers` academic support	Teachers` monitoring	Relations hips between classmates	Student influence	Competition for grades	Meaningful- ness of schoolwork
Teachers` emotional support	.61**	.36**	.26**	.60**	.08**	.48**
Teachers` academic support		.48**	.27**	.53**	-.04	.45**
Teachers` monitoring			.21**	.36**	-.03	.28**
Relationships Between classmates				.25**	-.07**	.15**
Student influence					.08**	.43**
Competition for grades						-.06**

\*\* p<0.01, \*p<0.05