

# **Learning environment, students' coping styles and emotional and behavioural problems**

A study of Norwegian secondary school students

**Elin Marie Thuen**

Dissertation for the degree doctor philosophiae



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## SUMMARY

One of the main purposes of the present thesis was to investigate to what extent associations between learning environment factors and emotional and behavioural problems could be influenced or accounted for by variations in personal characteristics. This was based on previous research which had stated that the associations between perceived learning environment and behavioral and emotional outcomes had primarily been identified at the individual level. Students' coping styles were included in the thesis as measurements of personal characteristics. A further purpose of the study was to explore the extent to which different learning environment factors were associated with off-task-orientation, emotional problems and externalising problems. In addition to exploring how students' coping styles could influence the relationship between learning environment factors and emotional and behavioural problems, investigating the direct associations between students' coping styles and emotional and behavioral problems were also of interest. Two data sources were used: a survey conducted in 1998 among 2006 9<sup>th</sup> grade students in a representative sample of Norwegian municipalities and a one group pretest-posttest design study linked to a restructuring of the learning environment in a Norwegian secondary school of 350 students. The restructuring itself provided us with an opportunity to investigate the aims of the thesis adopting an approach other than the survey study.

The results indicate that the way students usually cope with academic and social stress at school is related to their reports of emotional and behavioural problems, and, in general, a similar relationship pattern was found for the ten per cent of students with the most serious problems. These results indicate that students' coping styles are good predictors of emotional and behavioural problems. With regard to the examination of the degree to which the associations between learning environment factors and emotional and behavioural problems could be influenced or accounted for by students' coping styles, the results showed that one

third of the variance learning environment factors accounted for in emotional and behavioural problems had also been accounted for by students' coping styles. This may indicate that the associations between learning environment factors and emotional and behavioural problems to some degree could be reflections of students' coping styles in that coping styles affect or color students' *perceptions* of the learning environment or that students contribute to the *shaping* of the learning environment through their coping styles.

Finally, the results showed that the learning environment factors still accounted for a substantial amount of the variances in emotional and behavioural problems when controlling for students' coping style. About two-thirds of the covariance explained by learning environment factors in the variances in emotional and behavioural problems were explained solely by learning environment factors. The unique effect of learning environment factors on variances in off-task-orientation, externalising problems and emotional problems was 22%, 13% and 4%, respectively. The results indicate that most of the learning environment factors are related to emotional and behavioural problems. However, some of the learning environment factors emerge as stronger predictors of emotional and behavioural problems than the others. Among these, emotional support from teachers and perceptions of the meaningfulness of schoolwork stand out the most.



## LIST OF PAPERS

- PAPER I : 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.
- PAPER II: 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.
- PAPER III: Thuen, E., Bru, E. & Ogden, T. (In press). Students' perceptions of learning environment factors and their reports of emotional and behavioural problems. To what degree do students' coping styles influence this relationship? *Scandinavian Journal of Educational Research*.
- PAPER IV: Thuen, E. & Bru, E. (Submitted). Are Changes in Students' Perceptions of the Learning Environment related to changes in Emotional and Behavioural Problems?



## TABLE OF CONTENTS

Acknowledgements

Summary

List of paper

<b>1</b>	<b>INTRODUCTION.....</b>	<b>8</b>
1.1	Background and aims.....	8
1.1.1	Emotional and behavioural problems among students.....	8
1.1.2	The learning environment .....	9
1.1.3	Aims of the thesis.....	11
<b>2</b>	<b>THEORETICAL FRAMEWORK.....</b>	<b>12</b>
2.1	A need based approach to the understanding of the learning environment.....	12
2.2	The organisation of the learning environment factors included in the study.....	15
2.3.	Learning environment factors and emotional and behavioural problems.....	16
2.3.1	Relatedness support; emotional support from teachers and relationships between classmates.....	16
2.3.2	Autonomy support; student influence.....	19
2.3.3	Competence supportive learning environment factors; academic support from teachers, teachers' guidance of students, adaptation of schoolwork, meaningful schoolwork and competition for grades.....	22
2.3.4	Regulation support; teacher monitoring.....	26
2.3.5	Summary.....	27
2.4	Coping.....	28
2.4.1	Coping styles.....	28
2.4.2	The influence of coping styles on emotional and behavioural problems.....	30
2.5	The interplay between coping styles and the learning environment in relation to emotional and behavioural problems.....	32
<b>3</b>	<b>METHODS.....</b>	<b>34</b>
3.1	General study design.....	34
3.2	The school environment survey.....	37
3.2.1	Sample.....	37
3.3	The one-group pretest-posttest design study.....	38
3.3.1	Data collection and sample.....	39

3.4	Measurements and evaluation of measurements.....	40
3.4.1	Validity and reliability of measurements.....	40
3.4.2	Generalisability.....	47
3.5	Procedures.....	49
3.5.1	The school environment survey study.....	49
3.5.2	The one-group pretest-posttest design study.....	50
<b>4</b>	<b>RESULTS.....</b>	<b>51</b>
4.1	Paper I.....	51
4.2	Paper II.....	52
4.3	Paper III.....	54
4.4	Paper IV.....	55
<b>5</b>	<b>DISCUSSION.....</b>	<b>57</b>
5.1	The purpose of the study.....	57
5.2	Coping styles and emotional and behavioral problems.....	58
5.3	Do learning environment factors uniquely affect emotional and behavioural problems?.....	60
5.4	To what degree are associations between learning environment factors and emotional and behavioural problems accounted for by students coping styles?.....	62
5.5	Relationships between learning environment factors and emotional and behavioural problems .....	65
5.6	Concluding remarks to methodological considerations and suggestions for further research.....	74
<b>6</b>	<b>REFERENCES.....</b>	<b>77</b>
	<b>Appendix.....</b>	<b>96</b>

**Learning environment, students' coping styles and emotional and behavioural problems.**

**A study of Norwegian secondary school students.**

## **1 INTRODUCTION**

### **1.1 Background and aims**

#### **1.1.1 Emotional and behavioural problems among students**

The number of schoolchildren and adolescents with emotional and behavioural problems seems to have increased in recent decades. This represents a major challenge to schools in Norway and the rest of the western world (Achenbach, Dumenci & Rescorla, 2002; Chazan, Laing & Davies, 1994; Collishaw et al., 2004; Nordahl & Sørli, 1998; Ogden, 1995; Rutter & Smith, 1995; West & Sweeting, 2003; Winkley, 1996). Such problems range from concentration problems or off-task-orientation, to more serious externalising behavioural problems, on the one hand, to emotional problems, such as depression or anxiety related problems, on the other. Moreover, research indicates that these problems are increasingly manifesting themselves during adolescence (Achenbach et al., 1991; Cohen et al., 1993; Donovan & Jessor 1985; Dryfoos, 1990; Rutter, 1991; Størksen et al., in press; Wold et al., 1995). Emotional and behavioural problems are likely to influence students' current and future ability to function, both socially and academically. Hence, reducing negative behaviour and emotional problems in school is essential for fostering the best possible growth and adjustment in young people. In fact in Norway today increased efforts are being undertaken to find measures that can improve students' adjustment in school.

### **1.1.2 The learning environment**

Children and adolescents spend many important years of their lives at school. As a society we want schools that offer students a learning environment that fosters motivation, positive learning experiences and achievement levels, and a positive psychosocial development for everyone. Studies that have focused on the importance of the learning environment for emotional and behavioural outcomes (e.g. Bru et al. 1998; Firestone & Rosenblum, 1988; Fraser & Fisher 1982; Merrett & Wheldall 1987; Moos, 1979; Mortimore et al., 1988; Murberg, 2004; Rutter & Maughan, 2002; Short & Shapiro, 1993) offer a diversity of theoretical approaches. However, much research on the importance of students' learning environment has built on perspectives taken from school effectiveness research, where students' academic achievement has been the outcome variable most focused on. In this type of research school and classroom climate have been addressed (for an overview; Rutter & Maughan, 2002). The role of schooling in relation to emotional and behavioural development remains, however, much less fully explored, and research has shown only a weak relationship between the effects in these two domains, suggesting that crucial school influences might be somewhat different (e.g. Mortimore, 1998; Rutter & Maughan, 2002). Other perspectives on the importance of the social aspects of the learning environment are based on theories about work psychology (e.g. Karazek & Theorell, 1990) and motivational theories, such as self-determination theory (e.g. Ryan & Deci, 2000) and expectancy value theory (Atkinson, 1964; Eccles, 1983). Recently, perspectives from theories on child socialization have been adopted in order to examine different fields of socialization, such as schools (e.g. Barber & Olsen, 2004; Barber, 1997; Barber & Olsen, 1997; Eccles et al., 1997). In the development of a model for exploring important factors of the learning environment and understanding possible psychological mechanisms that might explain the reasons behind the impact of these factors on emotional and behavioural outcomes, perspectives derived from both child socialization and

motivational theories (e.g. self-determination theory) as well as elements from other perspectives have formed the theoretical foundation of the present study. The main perspectives will be further outlined below.

However, children do not come 'empty' to school. Based on an interactional perspective of development (e.g. Lazarus & Folkman, 1984; Rutter & Maughan, 2002), children's psychosocial development results from a dynamic process of interactions between individual characteristics and the social, physical and cultural characteristics of the different environments children meet. Recent studies among adolescent students have found 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, indicating that outcome variables are primarily predicted by individual students' perceptions of their learning environment (Anderman 2002; Bru, Stephens & Torsheim, 2002). Individual perceptions are likely to be influenced by individual characteristics as well as the actual environment (Eccles et al; 1997; Lazarus & Folkman, 1984; Rutter & Maughan, 2002).

On the basis of these considerations the present study also aims at exploring how personal factors, in our study students' *coping styles*, could influence the relationship between individual students' perceptions of learning environment factors and emotional and behavioural problems. The reason for including students' coping styles as personal factors is the substantial amount of research evidence demonstrating that pressures and expectations within the school environment constitute considerable sources of stress in young people (Armacost, 1989; Elkind, 1981; Kouzma & Kennedy, 2004; Sears & Milburn, 1991; Seiffen-Krenke, 1995; Sheridan & Smith, 1987). It is therefore of interest to examine students' coping preferences for dealing with stress situations at school and how this may influence behaviour and emotional adjustment, in addition to exploring to what degree coping styles might influence the relationship between learning environment and emotional and behavioural

problems. See below for an outline of the theoretical approach to coping and the interplay between the individual and the environment.

### **1.1.3 Aims of the thesis**

The main purpose of this thesis is to explore the relationship between students' perceptions of learning environment factors and emotional and behavioural problems. However, most studies exploring these relationships have not included any personal characteristic in order to test alternative hypothesis for these associations. The thesis aims therefore to include students' coping styles as personal variables in order to explore to what degree the associations between learning environment factors and emotional and behavioural problems could be influenced or accounted for by students' coping styles. A further aim is to explore the direct association between coping styles and emotional and behavioural problems.

Based on the above considerations, the aims of the thesis are to address the following questions:

- 1) How do students' perceptions of learning environment factors relate to their reports of off-task-orientation, externalising problems and emotional problems? (Papers I, III, IV)
- 2) How do students' reports of coping styles relate to their reports of off-task-orientation, externalising problems and emotional problems? (Paper II)
- 3) How and to what degree is the relationship between students' perceptions of learning environment factors and emotional and behavioural problems influenced or accounted for by students coping styles? (Paper III)
- 4) Do students' perceptions of the learning environment differ depending on their coping styles? (Papers III, IV)



## **2 THEORETICAL FRAMEWORK**

The theoretical basis of the thesis is that children's and adolescents' behaviour and emotional health, psychosocial development, are influenced by individual factors, environmental factors and the interplay between these. On this basis we assume that emotional and behavioural problems in students are affected by the characteristics of the learning environment as well as the coping styles students employ in dealing with the stress they face at school. Theoretical perspectives of and empirical evidence for the importance of learning environment factors are first presented, followed by theories and research on coping styles, and finally the interplay between coping styles and the environmental factors.

### **2.1 A need based approach to the understanding of the learning environment**

Theory and research in the field of socialization, primarily in a family context, indicate that experiencing connection with significant others, the regulation of behaviour and support of autonomy are factors critical for the healthy development of children and adolescents (e.g. Barber & Olsen, 2004; Barber & Olsen, 1997; Baumrind, 1971, 1989; Eccles et al, 1997). Research based on this perspective has converged in demonstrating that children are fare better when they (a) experience consistent, positive emotional bonds with significant others such as parents (connection), (b) have fair and consistent limits placed on their behaviour (regulation), and (c) are permitted to experience, value and express their own thoughts and emotions, leading to the development of a stable sense of psychological autonomy (Barber & Olsen, 1997; Maccoby & Martin, 1983; Steinberg, 1990). The theory of child socialization has been developed in a family context, where parent-child relations are the main focus, it is, however, also applicable and used in relation to other important areas of socialization, such as the school arena (Barber & Olsen, 2004; Barber & Olsen, 1997; Eccles et al, 1997). More research is however needed (Barber & Olsen, 2004).

Theory and the interpretation of research findings imply that experience with connection, regulation and autonomy, together as well as independently, are functionally significant for children *in that they meet basic psychological needs of healthy human development* (e.g. Barber, 1997; Eccles et al, 1997). Many researchers have argued the existence of fundamental human needs and that healthy psychosocial development is maximized in contexts in which these are satisfied. Motivational theories, such as self-determination theory (e.g. Ryan & Deci, 2000; Deci & Ryan, 1985) and self-system theory (Connell 1990; Connell & Wellborn, 1991) link development of self to the satisfaction of basic psychological needs. These theories argue for three fundamental needs; the need for competence, autonomy and relatedness, which according to Barber & Olsen (1997) overlap with the three socializing dimensions of the family context. Addressing self-determination theory, Ryan & Deci (2000) state that these needs provide the basis for categorizing aspects of the environment as supportive versus antagonistic to integrated and vital human functioning. Social environments that allow the satisfaction of these basic needs have been predicted to support such healthy functioning, whereas factors associated with need thwarting or conflict are predicted to be antagonistic. Thus, the concept of psychological basic needs provide the basis for making predictions about those conditions that promote optimal versus non-optimal outcomes in terms of psychosocial development and the quality of behaviour and experiences within a specific situation. Based on this, the quality of the learning environment could be viewed in relation to how well it is characterized by supportive and positive relationships, by student influence and participation, by competence promoting factors, and by positive regulating factors. The important question is then: what characterises a learning environment where these basic needs are being satisfied?

Research on child socialization outside the family has been fragmented, although there are findings indicating that the school context can provide central socialization experiences

(Barber & Olsen, 2004; Barber & Olsen, 1997). The Eccles work (Eccles et al., 1993) on transition from elementary to junior high school highlights all three central socialization dimensions. It appears that the transition results in unfavourable changes in providing for children's psychosocial needs. Larger sized junior high schools along with increased number of teachers and departmentalized teaching could make it more difficult for teachers to form close connections with their students. It could, however, also be a matter of teachers' attitudes towards students. Partly for the same reasons, greater emphasis is placed on teacher control and discipline, but apparently at the expense of student psychological autonomy in the form of fewer opportunities for decisions making, choice and self-management. Barber & Olsen (1997) investigated how the three central dimensions of socialization were associated with feelings of depression, antisocial behaviour and school grades in family, peer, school and neighbourhood contexts. Their findings showed that connection, regulation and autonomy were meaningful dimensions in the socializing experience in the four contexts mentioned, although family and peers were primary socialization domains. As compared to family and peers, school experiences appeared to be more problematic, characterized by a decreasing level of connection and regulation from fifth to eighth grade, together with experiencing low levels of autonomy in the classroom. Other studies have also produced similar findings (e.g. Otto & Atkinson, 1997). Moreover, Eccles et al (1997) have demonstrated that each of the three socialization experiences explains a unique amount of variance in adolescent functioning. Studies based on need based motivational theories have also confirmed the positive effects of need satisfaction. In two studies (Reis et al, 2000; Sheldon et al., 1997), multilevel modelling was used to relate variations in need satisfaction to well-being. At both the between-person (i.e., individual-difference) level and the within-person (i.e., daily-fluctuation) level, measures of basic need satisfaction related to positive affect, vitality, and the inverse to negative affect and symptomatology. These studies confirmed both that the

general satisfaction of each basic need contributed to general well-being, and that daily satisfaction of each need explained daily fluctuations in well-being over time. Two other studies in workplace settings (Baard, Deci & Ryan, 2000; Ilardi et al., 1993) found that employees' reports of the satisfaction of their basic need in the workplace was related to self-esteem, general health, vitality, and the inverse to anxiety and somatization. In educational settings research also demonstrates several benefits resulting from autonomy, relatedness and competence supporting learning environments (e.g. Deci & Ryan, 1992; Deci et al., 1981; Reeve, 2002; Reeve et al., 2004).

Taken together, theoretical perspectives and empirical evidence, to categorize aspects of the learning environment around the constructs of connection/relatedness, autonomy, competence and regulation seem to provide a useful and fruitful approach to understanding the learning environment. These dimensions seem to be significantly predictive of more positively youth functioning in and out of school. On this basis the quality of the learning environment could be viewed in relation to how well the classroom/learning environment is characterized by supportive and positive relationships, by student influence and participation, by factors supporting competence and by positive regulations. The important question is then to what extent the school setting is designed or experienced by the students to promote just these important dimensions.

## **2.2 The organisation of the learning environment factors included in the study**

The need for relatedness, autonomy, competence and regulation provide the basis for categorizing and organising the learning environment factors included in this study:

*Need for relatedness:* 1) Emotional support from teacher, 2) relationship between classmates

*Need for autonomy:* 1) Student influence

*Need for competence:* 1) Academic support from teacher, 2) teacher guidance of students, 3) adaptation of schoolwork, 4) meaningfulness of schoolwork, and 5) competition for grades

*Need for regulation:* 1) Teacher monitoring

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

A further outline is given below of the perspectives linking the included learning environment factors to the satisfaction of the need for relatedness, autonomy, competence and regulation. Additionally, the outline includes psychological and educational mechanisms that might link satisfaction of these needs with adjustment to school. The chapter will be organised around the socialising dimensions and the different learning environment factors will primarily be connected to one of the dimensions, as shown above. However, one must be aware that most of these factors influence more than one of the basic needs.

#### **2.3.1 Relatedness support; emotional support from teachers and relationship between classmates**

Relatedness refers to the desire to feel connected to and accepted by significant others (Barber & Olsen, 1997; Ryan & Deci, 2000). In a school context, students experience a need to feel a sense of connectedness to people who are important for them and are part of their learning environment. They have to feel that others care about their well-being and success (Newman, 2000). Students' perceptions of teachers as emotional supportive in the form of caring for, appreciating and liking students is vital for developing positive relationships between teachers and students. Such positive relationships could promote a feeling of relatedness or belongingness in students. Their relationships with peers at school may be equally important in this connection (see below for more about this). According to motivational theories linking positive psychosocial development to psychological needs, supportive relationships with teachers is important for behavioural, emotional, motivational and academic adjustment in

school (Bretherton & Munholland, 1999; Connell, 1990; Connell & Wellborn, 1991; Deci & Ryan, 2000; Resnick et al, 1997). The satisfaction of student needs resulting in they becoming affectively bonded with and committed to the school, and therefore inclined to identify with and behave in accordance with its expressed goals and values (Finn, 1989). When students feel committed to school their willingness to spend time and effort on tasks increases, also tasks that may not be seen as inherently interesting (Harter, 1996). The reason why students initially engage in such activities is because the behaviour has been prompted, modelled, or valued by significant others to whom they feel attached or related to. This suggests that relatedness, or the need to feel related to others, is centrally important for the internalisation of values, behaviour and engagement in tasks (Roeser, Eccles & Sameroff, 2000; Ryan, Stiller & Lynch, 1994). In this way relationships with teachers and bonds to school can promote positive and inhibit negative behaviour. Failing to promote a sense of belongingness could, on the other hand, lead to feelings of alienation, reduced initiative and the rejection of the school's values, resulting in problems adjusting to school and in negative attitudes to teachers and schools (Ryan & Deci, 2000).

Moreover, according to these theories, emotional bonds with teachers and schools affect student motivation, behaviour and emotional well-being also through the effect on student engagement during learning activities (Ryan & Deci, 2002). Engagement is characterized by attention, effort, persistence, interest and enjoyment of learning, and by a lack of negative feelings such as anger and anxiety. Autonomy and competence support (see more below) are also important for promoting engagement (Connell & Wellborn, 1991; Reeve et al., 2004). In this way, engaged students are likely to be more concentrated, display less oppositional behaviour and show fewer symptoms of emotional problems. At the opposite side, students who lack engagement are more likely to be disaffected, be more passive, do not try hard, and give in easily when facing difficult tasks (Wellborn, 1991). Engaged students are

also more likely to experience support from their teachers and tend to become even more engaged, while disaffected students are likely to experience interactions with teachers negatively and to suffer from even more decreased motivation (Harter, 1996; Skinner & Belmont, 1993). Student engagement in classroom activities could thus have considerable long-term consequences.

Addressing attachment theory (e.g. Ainsworth et al, 1978; Bowlby, 1982), warm and supportive relationships influence social and emotional development through internalised models of accessibility and support. Such models provide children with the security to approach and explore novel situations and can also enhance emotional development by providing children with a secure and consistent support system (Bretherton & Munholland, 1999). Psychologically vulnerable students often have a heightened need to feel secure, and a caring and supportive relationship with teachers is likely to foster a learning environment in which these students to a greater degree might feel safe and comfortable. Previous research suggests that such feelings are related to lower levels of emotional problems (Murray & Greenberg, 2000; Resnick et al., 1997). Warm and supportive relationships with teachers may also improve psychosocial development through positive effects on students' self-esteem (Davial et al, 1995; Harter, 1996; Lamarine, 1995). Poor self-esteem has been shown to be associated with depressive symptoms (e.g. Lazarus, 1999; Seligman, et al., 1984). Motivational theorists (e.g. Covington, 1984; Harter, 1983a) relate self-esteem to perceived competence and attributional styles. Others theorists, e.g. Seligman, Abramson, and their colleagues (Abramson, Garber & Seligman, 1978; Seligman, 1975; Seligman et al, 1984) point to the negative emotional and behavioural outcomes of learned helplessness and attributional styles associated with learned helplessness. Consequently, a negative path with little perceived support (poor relationships), reduced self-esteem and perceptions of competence, combined with a negative attributional pattern, may lead to emotional problems

as well as to reduced motivation and effort, which very likely could show up as concentration problems or more externalised problem behaviour.

Relationships with peers at school may be equally important promoting a feelings of relatedness or belongingness to school. Classmates serve as potential companions and friends and meet important social needs of the developing person. Research shows that the approval or disapproval classmates display can have a major effect on a child's or adolescents' sense of self (Berndt & Kiefe, 1996; Juvenon & Weiner, 1993). In addressing the symbolic interactionist's contention that the approval of significant others is incorporated into one's self esteem, Harter (1996) found that classmates' support (more than teachers' support) correlates most highly with self-esteem, reflecting the importance of good supportive relationships between classmates for students' self-esteem and well-being. Clearly, peer support in the form of classmates' approval in the school context (in contrast to approval from close friends) is critical for self-esteem. Since poor self-esteem is most strongly related to emotional problems, for instance depressive symptoms, little support from classmates might be a special risk factor for developing emotional problems (Lazarus, 1999; Seligman, et al., 1984). In general, positive peer relationships in school (friendship allied to positive features) seem to be important for school adjustment. Students who experience such relationships manifest not only higher self-esteem, but also more prosocial behaviour and positive attitudes to teachers, school and school work and fewer emotional problems (Berndt & Keefe, 1996; Harter, 1993).

### **2.3.2 Autonomy support; student influence**

Autonomy refers to the desire to be self-initiating and have a sense of acting in accordance with one's sense of self and being permitted to experience, value and express one's own thoughts and emotions (Barber & Olsen, 2004; Ryan & Deci, 2000). Connell (1990) defines the need for autonomy as the experience of choice in the initiation, maintenance and regulation of activity and the experience of connectedness between one's actions and personal



goals and values. In school, students need to feel a sense of agency or volition, i.e they are in charge of their own actions, feel free to think independently and can participate in decisions regarding their own learning situation in school (Connell, 1990; Deci & Ryan, 1985; Ryan & Deci, 2000, 2002). For students to perceive that they can influence their learning situation both through teachers listening to them and involving them in planning and shaping of learning activities is therefore assumed to be important for promoting a learning environment where students feel a sense of autonomy or self-determination.

Students in classrooms with autonomy-supporting teachers, as compared with students in classrooms with controlling teachers, demonstrate greater perceived academic competence (Deci et al, 1981), greater conceptual understanding (Grolnick & Ryan, 1987), more positive emotionality (Patrick, Skinner & Connell, 1993), higher intrinsic motivation (Deci & Ryan, 1991, 2000), better performance (Boggiano et al, 1993; Flink, Boggiano & Barrett, 1990), and increased engagement, characterized by effort, attention, interests and positive feeling (Connell & Wellborn, 1991; Reeve, 2002). Moreover, autonomy supporting teachers also facilitate the internalization of extrinsically motivated behaviour, which in turn increases student effort and engagement in learning activities (Ryan & Deci, 2002). Student autonomy is also related to more mastery-orientation and more time spent on tasks (Reeve et al, 2004).

Furthermore, teachers can potentially facilitate students' self-regulated learning by creating an autonomy-supporting learning environment. Self-regulated learners tend to take control of and responsibility for their own learning, and students may then feel free to set their own goals and accordingly perceive more control over their learning outcomes (Newman, 2000). In turn this could stimulate their efforts and striving for success and the ability to persist in cases of failures or difficulties, since they are likely to have attributed their achievements to their own efforts (Knight, 1995). The degree to which teachers challenge students and support autonomous behaviour and self-regulation will contribute to children's

belief that they are in charge of their own academic outcomes. Importantly, teachers thus contribute to the socialization of children's expectations of success. Students may then develop persistence and adequate and active coping strategies that stimulate personal growth both academically and socially (compare e.g. Lazarus, 1999)

A learning environment that supports autonomy will also possess the potential to increase students' feelings of *personal control*. According to the theories of attribution and control (Seligman, Abramson & Teasdale, 1978; Weiner, 1986) internal locus of control, as opposed to helplessness, seems to positively influence emotional well-being and mental health (Lazarus, 1999). On the other hand, students are more likely to feel that their behaviour is controlled by factors outside themselves in classrooms where teachers assert a great deal of control by offering students few opportunities for self-determined behaviour. Such practices can potentially cause both emotional and behavioural problems (Roeser & Eccles, 2000). When students are faced with academic difficulties, such teacher behaviour may lead to attributions of difficulties to lack of competence, feelings of shame, self-doubt and low self-esteem, which are themselves related to emotional problems, like anxiety (Dweck & Wortman, 1982). Alternatively, students who attribute their problems to hostile or unsupportive people generate feelings of anger, alienation and hostility towards others that could appear as externalizing behavioural problems (Connell & Wellborn, 1991; Roeser, Eccles & Strobel, 1998b; Weiner, 1994). Finally, few opportunities for influence seem to be related to students not valuing their school highly (Roeser, Eccles, & Sameroff, 2000). This in turn, negatively effects both their motivation and behaviour.

### **2.3.3 Competence supportive learning environment factors; academic support from teachers, teacher guidance of students, adaptation of schoolwork, meaningful schoolwork and competition for grades**

*Competence* refers to the desire to feel efficacious, to have an effect on one's environment, and to be able to attain valued outcomes (Connell & Wellborn, 1991). This basic need is closely related to the inherent satisfaction that results from exercising and extending one's own capabilities, and the central corresponding affect is a feeling of efficacy (Bandura, 1997; Harter, 1983a, 1996). Thus, in order to feel competent one must realize that one's actions have a causal relationship to successful outcomes (e.g. Harter & Connell, 1984; Skinner, Zimmer-Gembeck & Connell, 1998). In order to experience a sense of competence in school, students must have knowledge about how to do well in school (i.e. perceived strategies for achieving outcomes) and beliefs that one can execute those strategies (i.e. perceived capacities) (Connell & Wellborn, 1991). Such feelings will cause students to anticipate that they can be successful (Harter, 1996). Providing students with adequate academic support, individual guidance and an individually adapted study plan, together with a meaningful schoolwork, are learning environments factors that we assume will maximise a student's chances of being successful, and thus promote perceptions of competence.

In line with a socio cultural perspective on learning and development (e.g. Vygotsky, 1978), adequate academic support and individual guidance of students' learning, together with an individually adapted study plan (adapted to students interests and skills) constitute a learning environment offering a great potential for students to experience success. As such this is characteristic of a competence promoting learning environment. Research has revealed that perceptions of academic support are related to more success and less frustration, withdrawal or 'playing up' (Atwood, 1983; Evertson & Emmer, 1982), to improved academic competence and a lower incidence of student misbehaviour (Rutter, Giller, & Hagell, 1998).

Furthermore, the lack of academic support, in particular, could be a risk factor leading to emotional problems in young adolescents (Bru et al., 1998). Encouraging students to set their own goals and providing guidance on how to take responsibility for their own learning activities and processes have been found to be related to engagement and spending more time on learning activities, and so increasing student effort and enjoyment of learning (van Merriënboer & Paas, 2003). Research has also demonstrated that educational programs tailored to the individual student's needs enhance both motivation and learning outcome (Ryan & Deci, 2000). Finally, adaptive education has been found to reduce the risk of adjustment problems by maximizing students' opportunities for learning success (Wang & Wahlberg, 1985; Wang & Zöllner, 1990).

In satisfying their need for competence students must not only feel a sense of adequacy, this feeling must also be related to valued outcomes, i.e. to something important or meaningful. In this way, students' perceptions of the meaningfulness of schoolwork could be an important factor in satisfying students' need for competence. According to expectancy-value theory (Atkinson, 1964; Eccles, 1983), the incentive value (defined as the relative attractiveness of a goal) of a task and the expectations of success exercise a strong bearing on motivation. When students value (perception of meaningfulness or relevance) what they are doing, and believe (from previous experiences) that they can succeed, they will be motivated to try. The experience of success will promote feelings of competence. Expectations of success also cause students to try harder when the tasks are difficult (Eccles, 1983; Harter, 1996). Students will feel best about themselves and their abilities when they face meaningful tasks and into which they invest some real effort (Katz, 1995). By contrast, when students do not place any value on task, they may come to believe that learning is meaningless and that they will learn it by rote instead of understanding the material. In the long run, their skills, interest in learning and confidence in their abilities, that is their

competence, may deteriorate (Katz, 1988). A meaningless curriculum has also been found to be related to valuing school poorly, with all the negative consequences this could have on student motivation and hence on learning outcomes (Roeser & Eccles, 2000). It is also believed that the way teachers explain points to the students and provide them with support can make schoolwork meaningful, even if it does not immediately appear to be relevant.

How competition for grades relates to competence and in turn to emotional and behavioural problems is likely to be complex (Deci & Ryan, 1992; Harter, 1996). On the one hand, competition for grades may contribute to effort and investment by strengthening the incentive value of school subjects. This positive effect will particularly be the case for students who perceive that they are succeeding at school or are doing better than others (Deci & Ryan, 1992). In turn, this could positively affect their perceptions of competence. However, substantial research evidence exists into the negative effects of competing for grades. Research has demonstrated that an increased focus on competition and evaluation is associated with more negative attitudes to learning and achievement at school (Eccles & Midgley, 1988, 1990) and to a reduction in perceived competence and intrinsic motivation (Harter, 1996). Competition can contribute to a fear of failure and to feelings of incompetence especially in students with low levels achievements or in students who loose in comparison with others. This is likely to result in negative motivational as well as emotional effects. Moreover, Deci and Ryan (1992) claim that evaluation and competing for good grades, as with other means of control, seem to limit students' sense of autonomy and correspondingly to undermine their intrinsic motivation. They further claim that students who receive negative feedback, for example in the form of poor grades may lose extrinsic as well as intrinsic motivation. Moreover, increasing emphasis is being placed on social comparison as students come to be graded in terms of their relative performance in assignments and as information about individuals' performance levels become more public (Harter, 1996). Nicholls (1984)

specifically highlights the implications of such changes for the self, suggesting that they lead students to focus on the assessment of their abilities (ego involved) rather than on the learning tasks itself (task involved). He argues that this change in focus, in turn, has negatively impacts on students' motivation and effort in learning activities. A competitive learning environment could then negatively affect not only the perception of competence, but also relatedness since social comparison may lead also to reduced classmate support. As a result vulnerable students with low self-esteem will be especially at risk of developing emotional problems in a competitive learning environment.

Finally, a learning environment that promotes competence is also characterized by positive relationships (Eccles et al, 1997; Ryan & Deci; 2000). It has been argued that when teachers and students share a sense of task and purpose, the former are especially able to take the individual student's perspective and understand his or her thinking. Based on such understanding, they can guide the students' learning appropriately, which will increase the change of learning success and of the students to feeling competent.

Different mechanisms do probably exist that link the perception of competence to outcome variables. Perceived academic competence is highly related to motivational orientation, in that positive perceptions of competence are related to intrinsic motivation and internalised extrinsic motivation (Harter, 1996; Harter & Connell, 1984; Ryan & Deci, 2000). Such motivational orientation is in turn related to many positive factors such as interest, excitement and confidence, which then manifests itself both in enhanced performance, persistence and creativity (Deci & Ryan, 1991; Sheldon et al, 1997). One likely result may be more on-task-orientation and fewer emotional problems. However, self-determination theory states that feelings of competence will not enhance intrinsic motivation unless accompanied by a sense of autonomy (Ryan & Deci, 2000). Thus, people must not only experience competence or efficacy, they must also experience their behaviour as having been self-

determined for intrinsic motivation to be present. Moreover, the importance of perceived competence for students' psychosocial adjustment is also mediated through its effect on students' self-esteem. Competence or adequacy in domain deemed important and the support of significant others are each strong predictors of global self-esteem (e.g. Harter, 1992, 1993, 1996). Since good academic performance is important for the vast majority of students, and the level of correlation with self-esteem is substantial for these students, perceived competence (academic success and failure) will have a major impact on students' psychological adjustment (Harter, 1996). Research (Harter, 1996) has revealed a dramatic discrepancy between the importance many students with low self-esteem attach to academic success and their perceptions of competence. This discrepancy may seriously erode global feelings of self-worth, which in turn would increase the risk of their developing emotional problems.

Perceived competence together with support for autonomy and relatedness appears to facilitate student engagement. As stated above, engagement refers to the intensity and emotional quality of student involvement during learning activities (Connell & Wellborn, 1991; Skinner & Belmont, 1993; Wellborn, 1991). Engagement arises from experiences in which one's psychological needs for autonomy, competence and relatedness are met (Connell & Wellborn, 1991; Skinner & Belmont, 1993; Skinner, Zimmer-Gembeck & Connell, 1998). How teachers facilitate engagement therefore becomes a question of how they create a learning environment that supports and nurtures these basic needs.

#### **2.3.4 Regulation support; teacher monitoring**

Regulation refers to the need for placing fair and consistent limits on children's and adolescents' behaviour (Barber & Olsen, 1997). For positive psychosocial development to take place, children and adolescents also need to be exposed to positive regulating forces (Barber, 1997). Teachers' regulating activities in the classroom, in the form of monitoring

their students' behaviour, work and progress, create rules and a structure in the classroom that provides clarity and predictability for students (Kohn, 1996). Clarity and predictability are likely to contribute to creating a secure atmosphere beneficial to student development (Barber & Olsen, 2004). The positive effects of monitoring found on student behaviour (e.g. Doyle and Carter, 1987; Mortimore et al., 1988; Eccles et al., 1993; Barber & Olsen, 2004), could be explained by the positive effects of regulation. Vulnerable students can perceive an unregulated classroom context as unpredictable and insecure, while the opportunities for them to learn and feel confident can be weakened (Ertesvåg, 2000). In addition, such a classroom appears to increase the risk of deviant behaviour arising (Barber & Olsen, 2004). On this basis regulation by teacher may be assumed to constitute an important factor for behaviour and mental health. However, according to self-determination theory, regulation must be responsive to the students' need for autonomy as well as for relatedness (Ryan & Deci, 2000). Different views exist on the relationship between autonomy support and structure, but in line with self-determination theory, these exist as two independent contextual variables that can be complementary and mutually supportive (Connell & Wellborn, 1991). Teachers can provide little or a lot of structure and be controlling or supportive of autonomy. Student motivation thrives under conditions in which teachers find ways to provide optimal structure and high levels of autonomy support (Skinner & Belmont, 1993).

### **2.3.5 Summary**

The concept of basic psychological needs provides the basis for predicting conditions promoting optimal versus non-optimal outcomes in terms of psychosocial development. The quality of the learning environment could, on this basis, be viewed in relation to how well it is characterized by positive and supportive relationships, by student influence and participation, by competence promoting factors and by positive regulation of students' work and behaviour. We assume that the learning environment factors included in this study can positively affect



emotional and behavioural problems by promoting an environment that facilitates these needs. On the other hand, learning environment factors that fail to promote relatedness, autonomy, competence and positive regulation would negatively affect student behaviour and emotional well-being.

## **2.4 Coping**

### **2.4.1 Coping styles**

Coping deals with the way people manage those situations or conditions that are perceived as stressful. In the literature of coping, coping responses have been conceived of as structural or personality characteristics based on psychoanalytic ego-psychology (see Parker & Endler, 1996, for an historical overview; Lazarus, 1993a; Lazarus & Folkman, 1984), and as situationally dynamic processes in a transactional perspective (Lazarus, 1999; Lazarus & Folkman, 1984). The former refers to coping as traits or styles, defined as personality dispositions that people take into stressful encounters, so disposing them to react in certain ways. A preferred set of coping styles will be relatively stable and focus on what a person would usually do in stressful or challenging situations. Previous research has found stability and consistency in coping styles over time and across different stressful situations (Aldwin, 1994; Costa, Somerfield & McCrae, 1996; Gamble, 1994; McCrae and Costa, 1986). Cross-situational consistency in coping responses found in children and adolescents is considerably higher than reported in adults (Aldwin, 1994). The present thesis has adopted a trait-approach to the understanding of coping.

On the other hand, Lazarus's alternative to this traditional approach to coping is a process-oriented or dynamic one focusing on what a person actually thinks or does in a specific stressful encounter (Lazarus & Folkmann, 1984). One criticism of the trait approach to coping states that it reduces complex coping patterns in to unidimensional schemes, such as

repression-sensitization that have little explanatory or predictive value for what people actually do in difficult situations (Lazarus, 1999; Lazarus & Folkman, 1984). However, further research intended to examine coping dispositions has suggested that people dealing with stress experienced a relatively wide range of coping responses (e.g. Carver, Scheier & Weintraub, 1989; Costa, Somerfield & McCrae, 1996). Carver, Scheier and Weintraub's (1989) approach to coping has the strength that they conceive of coping dispositions as a multidimensional phenomenon, and the dispositional version of the COPE scale, developed by Carver, Scheier and Weintraub (1989), measures coping styles in a multidimensional way. The present study uses this scale to measure coping.

Moreover, coping dispositions have traditionally been measured globally as opposed to the process-oriented approach intended to measure coping strategies in a *specific* stressful situation. In this thesis we do not measure global coping styles, but rather coping styles related to stressful situations limited to social and/or academic stress at school. This is in line with Lazarus's (1999) claim that it is more appropriate or meaningful to measure coping dispositions limited to one problem arena compared to the measuring of global coping styles. Finally, in understanding how coping behaviour affects long-range outcomes such as somatic health and social and emotional functioning, in the present thesis emotional and behavioural problems, Lazarus (1999) sees the trait-approach as appropriate. He concludes that rather than arguing for only a process-centred as opposed to a structural, trait-centred approach, it is important to recognise that coping incorporates both stability and change, and that decisions must be made regarding choice of coping approach depending on the purpose of the study (Lazarus, 1999; Lazarus & Folkman, 1984). The purpose of the present thesis makes a trait-approach meaningful.

#### **2.4.2 The influence of coping styles on emotional and behavioural problems**

Coping in this study refers to emotional, cognitive and behavioural efforts or responses people usually employ in order to ameliorate or overcome stressful demands, regardless of outcome (Carver, Scheier & Weintraub, 1989; Lazarus & Folkman, 1984). Coping behaviours are separated into different categories. One widely used framework classifies coping responses according to their *function* (Lazarus, 1993; Lazarus & Folkman, 1984). These are; to manage or alter the problem that is causing distress (problem-focused coping or active coping) and to regulate emotional responses to problems (emotion-focused coping). The number of problem-focused forms of coping that are applicable across diverse situations seems relatively limited compared to the vast array of emotion-focused responses that are discussed in literature (Carver, Scheier & Weintraub, 1989).

Coping is an essential feature of stress and emotional reactions, and failure to adapt to troubling chronic stress over time seems to have long-range effects on somatic health and social and emotional functioning (Lazarus, 1999; Lazarus & Folkman, 1984). Substantial research evidence has indicated 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; Recklitis & Noam, 1999; Seiffe-Krenke, 1995; Steinar et al., 2002; Tolor & Fehon, 1987; Wilkinson, Walford & Espenes, 2000).

Some coping styles seem more relevant for studying in connection with school related stress and emotional and behavioural problems in students. The thesis includes; planning, seeking social support, behavioural disengagement (giving in), self-blame and aggressive coping. Research into children and adolescents indicates that behavioural problems could be

related to poor social competence and problem solving skills (Fischler & Kenndall, 1988; Ogden, 1995; Sørli, 1998 b). Little use of problem focused coping styles, such as *planning*, could be an indication of poor problem solving skills. Moreover, previous research indicates that children and adolescents perceive *seeking social support* as one of the most helpful ways of coping with problems (Frydenberg & Lewis, 1991; Ryan, 1989). A good ability to seek social support could therefore protect students against emotional and behavioural problems. *Self-blame* is another coping style relevant for coping with school related problems. Adolescence with its numerous and complex changes, together with increasing demands and expectations particularly at school, may easily trigger uncertainty and a greater risk of blaming oneself for social and academic problems (Harter, 1992). When individuals fail to succeed or have conflicts with others they tend to blame themselves to different degrees. Too much self-blame when faced with problems at school could be a risk factor for emotional problems (Compas, Malcarne & Fondacaro, 1988; Endler & Parker, 1994; Sandler, Tein & West, 1994). *Behavioural disengagement* is a coping style reflecting a tendency to reduce one's efforts in dealing with stressors, even abandoning the attempts to attain goals with which the stressor is interfering. Behavioural disengagement is reflected in phenomena that have also been identified with terms such as *helplessness*. In theory, behavioural disengagement is most likely to occur when people expect poor coping outcomes. If students easily give in when faced with problems at school, the problems are likely to persist. This situation may lead in time to a vicious circle of negative expectations, reduced efforts, and the experience of failure, which in turn could result in behavioural problems. Similarly, dealing with school related stress through *aggressive coping* is likely to be ineffective as well as stress increasing (Lazarus, 1993b). Previous research results indicate that aggressive coping is viewed as the least helpful coping style for adolescents (Ryan, 1989). In fact, it does not seem

to solve any problems, on the contrary, it may lead to more problems or conflicts with teachers as well as peers ( e.g. Newcomb, Bukowski & Pattee, 1993).

## **2.5 The interplay between coping styles and the learning environment in relation to emotional and behavioural problems.**

The major view in psychology today holds that children's psychosocial development and adjustment depends on personal as well as environmental factors and the interplay between these (Evenshaug & Hallen, 1993; Lazarus & Folkman, 1984; Rutter & Maugham, 2002). The socialisation of children is conceived of as a two-way process of continuous interplay between the individual and the environment. Through their behaviour people are not simply exposed to environmental influences but also contribute to selecting and shaping the environment they experience (Scarr & Scarr, 1992). Some researchers ( e.g. Belsky, Lerner & Spainer, 1984; Lazarus & Folkman, 1984) describe this interplay as a transaction between the child and the environment. The transactional model assumes that the person as well as the environment has a mouldable nature where development is considered as a result of reciprocal influences between personal and environmental characteristics as these changes over time.

This complex interplay between personal factors, environmental factors and psychosocial development suggests that previous correlations found between learning environment factors and emotional and behavioural problems could in part be reflections of personal characteristics. Through this interplay between personal factors and the environment, students' coping styles could influence emotional and behavioural outcomes in several ways:

- 1) By contributing to the creation or shaping of the learning environment through the way students usually cope with stress, and thus indirectly effect emotional and behavioural problems.
- 2) By perceiving the learning environment differently dependent on their coping styles, that is students' perceptions of the learning environment are coloured by their coping styles, and thus making the associations between learning environment factors and emotional

and behavioural problems spurious. 3) By interactions, that is to what degree coping styles could moderate the effects of stress on emotional and behavioural problems or whether the same learning environment could produce different responses among students, dependent of their coping styles (Rutter & Silberg, 2002).

In the context of school influences, personal factors and the environment will correlate when a child's own behaviour evokes particular patterns of responses from teachers. For example, students with a tendency to respond aggressively to problems at school may easily be met with negative responses from others, from teachers as well as fellow students. Receiving negative response from a teacher may in turn affect student behaviour, a situation that could in time lead to a vicious circle affecting both teacher and student behaviour negatively. Thus students and their teachers create a shared, unsatisfactory, stressful learning environment (Bugental & Goodnow, 1998). Another example might be when 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 (behavioural disengagement). Previous research indicates that academically motivated students experience more teacher support than the less motivated ones who could be met with responses that undermine motivation (Skinner & Belmont, 1993).

Personal factors and the environment will also correlate when the former influence or colour a person's *perception* of a situation. To take some examples: 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). It could therefore be assumed that students who frequently employ aggressive coping when dealing with problems may perceive the learning environment more negatively. Moreover, students with 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. In this way students perceive their learning environment as more negative and stressful, which could be related to higher levels of emotional and behavioural problems. Previous research has shown that children differ both in their perceptions and their experiences of the school environment (Roeser & Eccles, 2002).

Person-environment interactions may be implicated when children with differing abilities or temperamental characteristics demonstrate varying responses to the same classroom or school setting. For example students who frequently resort to problem-focused coping like *planning* and *seeking social support* are more able to manage a learning environment characterised by increased student autonomy and responsibility perhaps to a greater degree than students who employ fewer of these coping styles. Moreover, students who tend to *cope aggressively* with problems may take advantage of learning environments with “looser” structures by indulging in disruptive behaviour. In these cases students’ coping styles could moderate the effects of stressful situations.

### **3 METHODS**

#### **3.1 General study design**

The overall aim of this thesis is to examine the influences of students’ perceptions of their learning environment on emotional and behavioural problems. Previous research has documented associations between perceived learning environment and emotional and behavioural problems (e.g. Bru et al., 1998; Firestone & Rosenblum, 1988; Fraser & Fisher, 1982; Merrett & Wheldall, 1987; Moos, 1979; Short & Shapiro, 1993; Thuen & Bru, 2000). However, most of these studies did not differentiate between individual and class or school level effects. More recent studies among adolescent students suggest that not only emotional

and behavioural problems but also students' perceptions of the learning environment vary considerably more within school classes than between schools or classes, and that the variance accounted for in emotional and behavioural problems by perceptions of the learning environment has, thus, primarily been identified at the individual level (e.g. Anderman, 2002; Bru, Stephens & Torsheim, 2002). The findings indicating that associations between perceived learning environment and behavioural and emotional outcomes primarily are identified at the individual level may lead to 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 emotional and behavioural problems could thus be spurious, or students' coping styles could contribute to shaping the learning environment and so 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. 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.

One important aim of the present thesis is to investigate to what extent these different assumptions apply to the relationship of the perceptions of the learning environment with emotional and behavioural problems. One approach to this investigation will be to test the assumption that the measurements of individual coping styles account for the covariance between perceived learning environment and emotional and behavioural problems (Paper III). Another approach will investigate how within-subject changes in the perceived learning environment are associated with changes in reports of emotional and behaviour problems (Paper IV). In the latter approach the effects of individual characteristics have been



minimized by studying the covariance of within-individual changes in perceptions of the learning environment and reports of emotional and behavioural problems.

If associations between learning environment factors and emotional and behavioural problems are indeed not spurious, another aim of the thesis will then be to investigate how different learning environment factors are related to different forms of emotional and behavioural problems (papers I, III and IV). Moreover, the thesis also aims at investigating whether associations between learning environment factors and emotional and behavioural problems differ depending on students' coping styles (the interaction effect) (papers III and IV). A final aim is to explore how students' coping styles are related to their reports of emotional and behavioural problems (paper II). The thesis draws on data from two different sources, a survey study and a "one-group pretest-posttest design" study.

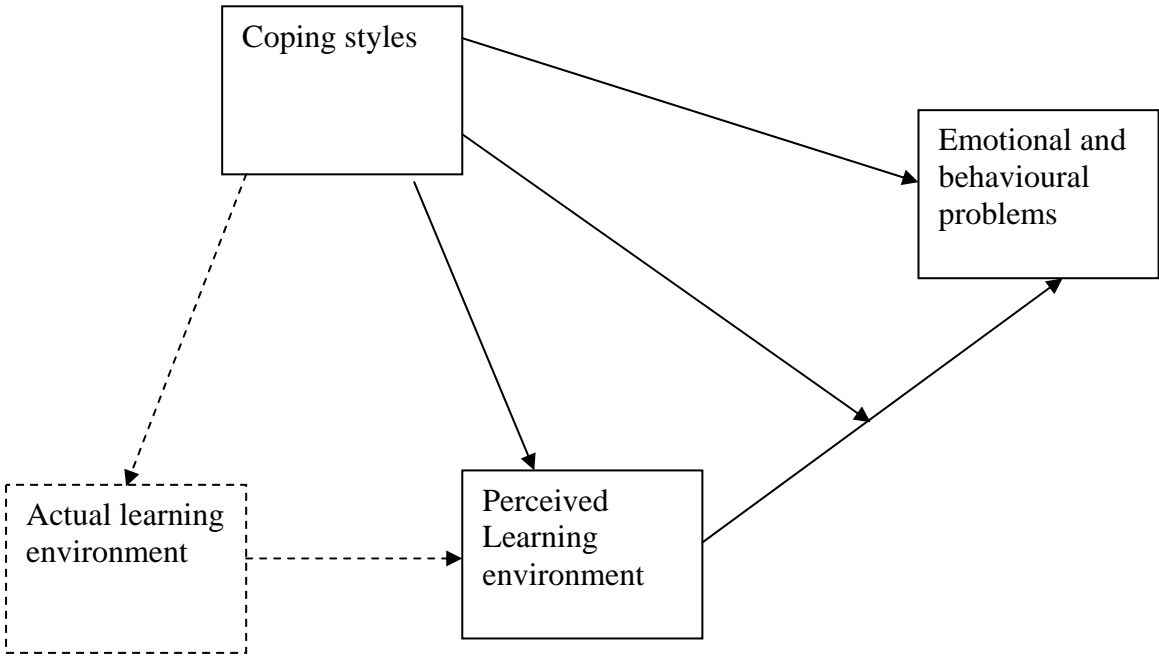


Figure 1. Illustrations of the general study design

Dotted lines indicate that these aspects were not measured.

## **3.2 The school environment survey**

This survey was conducted by the Centre for Behavioural Research at Stavanger University in May 1998 with the aim of capturing the school environment as perceived by the students and improving the understanding of how the school environment relates to students' behaviour and emotional well-being. Only parts of the dataset collected from the students have been used as a source of this thesis. Consent was obtained from The Data Inspectorate (the Personal Data Act, 2000, Norway), the district offices in the selected municipalities and the principals at the schools prior to collecting data. Each home was informed about the survey to allow parents to stop their child from participating. Finally, the students themselves could refuse to participate.

### **3.2.1. Sample**

A representative sample of 2006 Norwegian 9<sup>th</sup> grade (15 years old) students took part in the survey by completing a questionnaire. The sample of districts and schools was representative according to the Norwegian Central Bureau of Statistics' standard for municipality classification (Statistics, Norway, 1994) (see 3.4.2 about more details). Of the respondents 51% were female, while 49% were male students. The response rate was 86%. The data was collected during a regular 45- minute classroom period using a self-completion questionnaire and a procedure ensuring confidentiality and anonymity. To ensure optimal completion of questionnaires teachers read out each question loud. 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.

### **3.3 The one-group pretest-posttest design study**

This study was connected to a restructuring of the learning environment in a Norwegian secondary school of 350 students. The restructuring provided us with an opportunity to investigate the aims of the thesis with another approach different from the survey study. Paper IV is based on this study. The restructuring was initiated, planned and carried out by the school staff. The project was initiated to restructure the learning environment in order to enable individually adapted learning to take place and to increase the students' responsibility for and influence over their own learning conditions. The process involved teachers placing greater emphasis on guiding students individually and in groups. Students drew up their own individual study plan, following guidelines provided by the teachers, describing the goals, tasks and working methods in the different subjects for a period of one or two weeks. Most of the time the students worked according to their own study plans, alone or in groups, with guidance and supervision from their teachers, while the teachers spent more time in the classroom in direct contact with the students.

The research design could be characterized as a "one-group pretest-posttest design" (Cook & Campell, 1979) in which it is possible to track individual students' responses between the measurement points. The design was utilized to explore to what extent the associations between learning environment factors and emotional and behavioural problems identified by previous research are merely reflections of individual student characteristics. The design minimizes the influence of individual characteristics on the associations of perceived learning environment with emotional and behavioural problems. Moreover, connecting the study to this planned restructuring of the learning environment also enabled an exploration of how changes in the learning environment from pre-test to post-test might affect emotional and behavioural problems.

According to Cook and Campell (1979) “The one-group pretest-posttest design” is widely used in the social sciences. One advantage of quasi experimental studies is a higher qualification level for suggesting the causes and effects of relationships between variables than correlation studies - here the school environment survey study - allow us to do (Kerlinger & Lee, 2000). However, drawing conclusions about the causal inferences between variables must be done with caution especially due to the lack of a control group in the one-group pretest-posttest design (Cook and Campell (1979). One should bear in mind the difficulty of guarding against irrelevant factors contributing to changes in dependent variables and consequently affecting the study findings. Maturation represents another threat to internal validity. An attempt was made to compensate for this by adjusting post-test scores for the general age trend (see “procedures” for more details).

### **3.3.1 Data collection and sample**

Consent was obtained from The Data Inspectorate (the Personal Data Act, 2000, Norway), the district office in the municipality, and the principal at the school prior to collecting the data. Each home was informed about the study to allow parents to stop their child from participating, while the students themselves could refuse to participate. Each student was given an identification number enabling individual students to be tracked from pre-test to post-test.

Data were collected at three points in time at twelve monthly intervals (in May 2000, 2001 and 2002). At pre-test (2000) the respondents were attending 8<sup>th</sup> and 9<sup>th</sup> grade. These students were followed up after one year, and at post-test (2001) they were attending 9<sup>th</sup> and 10<sup>th</sup> grade. A total of 158 8<sup>th</sup> and 9<sup>th</sup> graders were included at pre-test, and of these 119 (75%) completed post-test after one year. Thus, the final pre-post-test sample study comprised 119 students. The 2002 data were not used to create a longitudinal design incorporating three measurement points because the sample would have been too small. The total sample

comprised 245 students in 2000, 248 students in 2001 and 287 students in 2002 including students from 8<sup>th</sup> to 10<sup>th</sup> grade. This total sample was used to correct age related changes in students' perceptions of the learning environment and reports of emotional and behavioural problems. See procedures below for more details.

The data was collected during a regular 45- minute classroom period by using a self-completion questionnaire and a procedure ensuring confidentiality and anonymity.

### **3.4 Measurements and evaluation of measurements**

Papers I, II and III are based on data from the survey. The data source for paper IV was also a self-completed questionnaire with a variable content very similar to that in the survey. Some new variables were added to capture the main focuses of the restructuring of the learning environment. Parts of the dataset collected from the students have been used as a source of paper IV. Factor analyses have been conducted to establish the measurement model for emotional and behavioural problems, coping styles and learning environment factors in papers I, II and III, respectively. In paper IV the sum scores of items included in the different factors were computed on the basis of the previously presented factor analyses.

#### **3.4.1 Validity and reliability of measurements**

The concern of validity is whether we measure, what we think we measure (e.g. Kerlinger & Lee, 2000); whether a constructed scale measures what it is supposed to measure, namely a “construct” of “the real world” (Gall, Borg & Gall, 1996). Content validity is one aspect of validity. According to Kerlinger & Lee (2000), content validity is the representativeness of the content – the substance, the matter, the topic of a measurement instrument. Content validation is basically judgmental, i.e. each item needs to be judged on its presumed relevance to the property being measured. Another aspect of validity is construct validity, which links

psychometric notions and practices to theoretical notions (Kerlinger & Lee, 2000). When inquiring into the construct validity of measurements, one usually wants to know which psychological or other properties can explain variances in the measurements. The significant point about construct validity that sets it apart from other types of validity is its preoccupation with theory, theoretical constructs, and scientific empirical inquiry involving the testing of hypothesized relationships. According to Kerlinger & Lee (2000) factor analysis may be considered a powerful tool for construct validity. Factor analysis is essentially a method of identifying those variables that have something common. If some items in a scale have been designed to measure emotional problems, then in factor analysis those items should be given high loadings for one factor and low for the others. In the present study exploratory and confirmatory factor analyses were employed to test the construct validity of the items intended to measure learning environment factors, coping styles and emotional and behavioural problems (see more below).

The reliability of the data is also of concern for the validity (Kerlinger & Lee, 2000). Measurement of a scale's internal consistency may be regarded as contributing to the validation of a scale since it indicates whether the scale is intended to measure the concept of uniformity. Furthermore, measuring internal consistency is also frequently used as a measurement of reliability for estimating the reliability coefficient of a variable from the inter-correlation of items. In fact, reliability and construct validity can be viewed as points along a continuum rather than as sharply distinguished ideas since each involves degrees of agreement between the measurements (Nunnally & Bernstein, 1994). Cronbach's alpha is a common estimate of internal consistency, and theorists vary as to what level of internal consistency they consider acceptable for research purposes. For instance, Kerlinger & Lee (2000) note that it is common to use .70 as the lower limit of an acceptable Cronbach alpha, while Anastasi and Urbin (1997) mention no such rule. Some researchers state that higher

levels of reliability are required if the instrument is an important, final or irreversible test concerned with individuals (e.g. Linn & Gronlund, 1995), meaning that the purpose of the measurement must be taken into consideration.

### **Emotional and behavioural problems**

Emotional problems, off-task-orientation and externalizing problems were included as dependent variables in this thesis. *Emotional problems* were assessed by a modified version of the Hopkins Symptom Checklist (Derogatis et al, 1974). The scale included seven items intended to capture depressive and anxiety related symptoms as an expression of emotional problems. With regard to content validation it was assumed that these items represent or are relevant for the subject being measured, namely emotional problems. *Off-task-orientation* and *externalising problems* were assessed by two scales developed and documented by our research institute (Bru, Stephens & Martinsen, 2002; Bru, Stephens & Torsheim, 2002; Thuen & Bru, 2000; Thuen & Bru, 2004; Thuen, Bru & Ogden, in press). The items on off-task-orientation and externalizing problems were chosen on a theoretical basis so as to capture content validity. Rutter (1995) and Chazan et al (1994) divide emotional and behavioural problems into externalising problems, such as fighting and quarrelling on the one hand and internalising problems, such as depressive symptoms on the other. Moreover, Odgen (1998) and Nordahl & Sørli (1998) divide behavioural problems into more serious externalizing problems and less serious, although disturbing, concentration problems.

In papers II and III a combination of exploratory and confirmatory factor analyses was used to establish the measurement models for dependent variables (see paper II for more details of the results of factor analyses). With regard to testing the construct validity of the measurements, the analyses yielded a factor structure in accordance with the original sub scales, indicating that these assessed three different concepts. Measurements of reliability indicate high internal consistency among items included in the scales. Taken together we

assume that these scales measure what they are supposed to measure, namely three different forms of emotional and behavioural problems: emotional problems, externalising problems and off-task-orientation.

### **Coping styles and school related stress**

Coping styles were included as independent variables in paper II and as control variable/independent variables in papers III and IV. Measurements of coping were assessed by subscales selected from the following established scales: 1) The COPE scale (Carver et al., 1989): “Active coping”, “Planning”, “Seeking social support for instrumental reasons”, “Seeking social support for emotional reasons”, and “Behavioural disengagement”. 2) A coping scale developed by Vitaliano et al. (1985): “Self-blame”. 3) “Life Events and Coping Inventory” (Dise-Lewis, 1988): “Aggressive coping”. 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.

The dimensionality of items assessing coping styles was tested by a combination of exploratory and confirmatory factor analyses. Items from seven sub scales on coping styles were included in the present study. However, we assumed that some of the scales (especially “Active coping” / “Planning” and “Seeking social support for emotional reasons” / “Seeking social support for instrumental reasons”) could overlap conceptually. A five-factor solution combining the scales “Planning” and “Active coping” and the two scales on seeking support presented the most meaningful factor content. These factors were therefore included in analyses. (See paper II for more details about the factor analyses).

So far as construct validity is concerned, students’ coping styles were measured by well established and previously documented coping scales based on coping theory (Carver et al., 1989; Vitaliano et al., 1985; Dise-Lewis, 1988). Except for “Planning” and “Seeking social support”, the factor pattern was in accordance with the original subscales. We,



however, combined four sub scales into two scales. Both active coping and planning are problem focused coping styles, and the factor analysis indicated that these could be combined into a uniform concept. The results of factor analysis also indicated that seeking support for emotional reasons and instrumental reasons could constitute a uniform concept. Content validation is basically judgmental, i.e. each item needs to be judged for its presumed relevance to the subject being measured (Kerlinger & Lee, 2000). A closer inspection or judgement of the items included in these two combined factors support the assumption that these scales measure what they are intended to measure, namely active coping/planning and seeking support. Moreover, measurements of reliability indicate a high level of internal consistency for these scales.

The internal consistency of behavioural disengagement and aggressive coping were, however, below .70, which according to Kerlinger & Lee (2000) is beneath the lower limit for an acceptable Cronbach alpha, even though Anastasi and Urbin (1997) do not mention such a rule. The results of the factor analysis indicate, however, that these scales assess two different, uniform concepts. Two items that were likely to overlap in content with items in the scale on externalising problems were excluded from the scale assessing aggressive coping, leaving the scale with three items. The low reliability may have resulted from this, which could also explain the relatively low internal consistency in behavioural disengagement (4 items). However, different expressions for different respondents could also reduce the inter correlation between items included in the scales. A further development of these scales could be valuable.

The control variable *School related stress* was constructed for this study and included three single items, one focusing on academic stress, one on social stress in relation to peers at school, and one on social stress in relation to teachers. The items assessed the degree of stress students had experienced during the previous month in relation to these sources of stress and

incorporated a six-point scoring range from “No stress” to “Very high degree of stress” in order to satisfy the request for parametric statistics. To capture content validity, the three single items were chosen on a theoretical basis, stating that coping efforts are likely to be influenced by these types of stress as well as the levels of stress (e.g. Lazarus & Folkman, 1984). Measuring a construct by only one single item is not considered preferable, and we could question the validity of a constructs measured in this way. However, in this study (paper II) the focus was not on exploring the effect of stress but on controlling for stress when exploring relationship between coping styles and outcome variables.

Furthermore, the item content of items in instruments assessing self-blame and aggressive coping may overlap with the item content of scales assessing emotional problems and externalizing problems, respectively. To test the discriminant validity of these variables two alternative confirmatory factor analyses including all the indicators for coping styles and emotional and behavioral problems were conducted. The first were specified according to the factor structures presented in paper II. In the second analysis, items for self-blame and emotional problems were set to load on one latent variable, while items for aggressive coping and externalising problems were set to load on another single latent variable. The results showed that the first model yielded a significant better fit than the second factor structure ( $\Delta\chi^2(13) = 1153, p < 0.001$ ), indicating that the variables assessing self-blame and aggressive coping could therefore be empirically distinguished from those assessing emotional problems and externalising problems, respectively.

### **Learning environment factors**

The measurements of learning environment were included as independent variables in papers I, III and IV. The learning environment factors were chosen on a theoretical basis so as to capture the content validity of the different learning environment factors. The theoretical

approach underlines the importance of experiences of connection, autonomy, competence and regulation for a healthy development in children and young people (e.g. Barber, 1997; Eccles et al, 1997; Ryan & Deci, 2000). Consequently we assumed that the different learning environment factors included in the measurements could contribute to such experiences.

The scales assessing students' perceptions of *learning environment factors* have been constructed by our research institute and previously documented in several studies (Bru, Stephens & Torsheim, 2002; Bru et al., 1998; Thuen & Bru, 2000; Thuen, Bru & Ogden, in press). These scales were constructed to assess students' perceptions of teachers' emotional support, teachers' academic support, teachers' monitoring, relationships between classmates, student influence and competition for grades. The dimensionality of the items assessing the learning environment was explored by factor analysis, which yielded a six-factor solution that accorded with the expected subscales of the implemented learning environment instrument. (For wording of items and results of factor analysis, see appendix). Concerning construct validity, the results of factor analyses (e.g. Bru, Stephens & Torsheim, 2002) indicate that the scale measuring learning environment assesses different concepts. Moreover, measurements of reliability indicate high internal consistency among items included in the different subscales.

In paper IV sum scores of items included in the factors were computed based on previous factor analyses. Moreover, two additional variables were included as independent variables in the one-group pretest-posttest design study in order to assess key elements of the restructuring of the learning environment. These scales were developed for this specific study and were intended to measure teachers' guidance of students and how well schoolwork was adapted to students' interests and skills. Students' perceptions of teacher guidance were assessed using a sum score of four items. Their perceptions of how well schoolwork was adapted to their needs were assessed by a sum score of four items (see appendix for the

wording of items). So as to capture content validity, the items included in the two scales were chosen on a theoretical basis (e.g. Vygotsky, 1978) underlining that an adapted learning environment could contribute to experiencing competence. The measurements of internal consistency indicate satisfactory inter-correlations between items included in the scales. However, when including new constructs in a study we should have conducted new factor analyses to establish the factor structure of this extended learning environment scale and thus also test the construct validity of the constructs. This would be helpful for further research in establishing the basis for this extended scale.

Students' perception of the *meaningfulness of schoolwork* was included as a mediating variable in paper I and as an independent variable in papers III and IV. The semantically differential scale intended to measure the meaningfulness of schoolwork was developed by our research centre and has been documented in previous research (e.g. Thuen & Bru, 2000; Bru, 2006; Thuen; Ogden & Bru, in press). In order to capture content validity items related to how useful, meaningful and interesting students find schoolwork were chosen on a theoretical basis, so stating that the value people place on tasks exercises a strong bearing on motivation and effort (Atkinson, 1964; Eccles, 1983). Factor analysis indicated that the scale assesses a uniform concept, and the measurement of internal consistency is in line with this.

Finally, the reliance on self-report may constitute a threat to the validity of measurements. However, numerous studies have addressed this issue; for instance previous research in the school context indicates that aggregate scores for students' perceptions of learning environment factors correspond well with observational data of learning environment (De Jong & Westerhof, 2001).

### **3.4.2 Generalisability**

Generalisability is also called external validity because it deals with whether the results obtained in a study are valid outside the original setting and the sample examined (e.g.

Robson, 1993). To enhance generalization the sample must be as similar as possible to the population as a whole, that is the sample must be representative of the population. In the present thesis (papers I, II and III) the population is 15 year-old students. The validity of generalizations depends on random sampling (Kerlinger & Lee, 2000). The survey in this thesis employed stratified random sampling, which divided the nation's population into strata and constructed the random sample within each stratum (Robson, 1993). The sample was drawn from all Norwegian compulsory schools, while the Norwegian Statistical Bureau's classification of Norwegian municipalities was used to define the strata (Statistics Norway, 1994). Within each stratum municipalities were randomly selected, and in the selected municipalities two primary schools and one secondary school were randomly drawn. Fourteen of the schools were of the combined type. In the selected schools, students in 5<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> grade were invited to participate. The present thesis (papers I, II and III) is based on data from 2006 9<sup>th</sup> grade students giving a response rate of 86%. Such a response rate is considered satisfactory. On this basis the dataset (and results) is considered to be representative of Norwegian 9<sup>th</sup> grade students.

So far as generalisation is concerned the results of the one-group pretest-posttest study are only applicable as a starting point for the sample studied. However, generalisation could be considered on a theoretical basis, namely whether it is plausible to assume that the results of this study could be generalized to other secondary schools (Judd, Smith & Kidder, 1991). An important question then is how "representative" the "experiment" school is compared to other Norwegian secondary schools. Based on our knowledge of the school, we have little reason to believe that it stands out from other schools to any appreciable degree. Single case studies, such as this one, can contribute to generalizations (Kerlinger & Lee, 2000) when used with caution and compared to theory as well as to the results of the surveys.

## **3.5 Procedures**

### **3.5.1 The school environment survey study**

The individual student is the unit of analysis throughout the thesis while the sample unit was school classes. This may represent a bias to the assumption that the unit of analysis is independent of the measured concepts (Kerlinger, 1986; Murray & Hannan, 1990). It may be particularly relevant to measuring the learning environment as the students within a class have common experiences, which may increase the covariation of these measures. The major concern relates to Type I errors, i.e. reporting differences between groups when no difference are present (Murray & Hannan, 1990). Thus, a significance level below 0.05 may be suggested to avoid errors based on intraclass correlations. However, the majority of the results yield significant levels far below 0.05, and it is therefore not likely that class level analysis would have changed the results.

The study intends to understand how the individual students' perceptions of their learning environment (and their self reported coping styles) affect their behaviour and emotional well-being, and not understand differences between schools. The individual unit focuses on the individual's behaviour and perceptions, and the analysis could suggest results valid for individuals. The results of the variance component analysis in study III 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.

The statistical analyses (in the thesis) were conducted by the means of two statistical tools - SPSS program (Norusis, 1986, 2000) and AMOS (Arbuckle & Wothke, 1999). Univariate analyses included descriptive, reliability and factor analyses (exploratory and

confirmatory) (papers I, II and III). Bivariate analyses included Pearson product-moment correlations between the variables treated as predictors and these variables and the dependent variables (paper I, II and III). Multiple regression analyses, linear (paper I), multivariate (paper II ) and logistic (paper II), were employed in the present thesis to assess the effect and magnitude of the effects of the independent variables on the dependent variables. Dichotome scores for dependent variables were constructed for use in logistic regression in paper II. These scores identified those with the 10% highest scores on the three different dependent variables. Scores for externalising problems showed a skewed distribution and were therefore transformed by the  $\log_{10}$  logarithmic function before entering the regression analyses. In paper III multivariate GLM analysis was used to predict the multivariate effect of the independent variables (learning environment factors and coping styles) on the dependent variables together and on each of them. The same procedure was employed for predicting the influences of coping styles on scores for learning environment factors. In paper III variance component analysis was computed to assess the class level variance components for variables assessing emotional and behavioural problems.

### **3.5.2 The one-group pretest-posttest design study**

Statistical analyses were conducted using SPSS (Norusis, 2000). Univariate analyses included reliability testing (Cronbachs alpha), and analyses of mean scores and standard deviations for scores of learning environment factors and emotional and behavioural problems at pre-test and post-test. Scores for post-test were corrected for general age trends (see below). Multivariate analysis of variances (between pre- and post-test) was computed by the general linear (GLM) module, Repeated Measures Procedure. Bonferroni correction was implemented to adjust for the number of comparisons conducted. Multiple regression analyses (Partial correlations) were employed to assess the correlations of change scores for dependent

variables with change scores for independent variables (learning environment factors). In these analyses, pre-test scores for the independent and the dependent variables were entered as covariates. The same procedure was employed to assess correlations of change scores for dependent variables with scores for coping styles at pre-test. In these analyses pre-test scores for the dependent variables were entered as covariates.

Previous studies (e.g. Bru, Stephens & Martinsen, 2002; Byberg & Tybring, 2004) have revealed a stable age trend for students' responses to scales assessing learning environment factors and emotional and behavioural problems. Corresponding age trends were seen in the present sample, and post-test scores for learning environment factors and emotional and behavioural problems were therefore corrected for these age trends. These corrections were carried out by first computing the quotients for the differences in mean scores between 8<sup>th</sup> and 9<sup>th</sup> grade ( $9^{\text{th}} \text{ grade scores} / 8^{\text{th}} \text{ grade scores}$ ) and between 9<sup>th</sup> and 10<sup>th</sup> grade ( $10^{\text{th}} \text{ grade scores} / 9^{\text{th}} \text{ grade scores}$ ), respectively for each of the included variables, and then multiplying post-test scores by the appropriate quotient. These corrected scores were included in the analyses.

## **4 RESULTS**

### **4.1 Paper 1**

#### **“Learning environment, meaningfulness of schoolwork and on-task-orientation among Norwegian 9<sup>th</sup> grade students”**

The main aim of this study was to explore how learning environment factors were related to on-task-orientation, and how these relationships were mediated by students' perceptions of the meaningfulness of schoolwork.



Results showed that a majority of the students reported being on-task-oriented during lessons. However, between 10% and 20% reported problems with their on-task-orientation, most frequently when teachers were instructing the whole class, and least often when they were working individually.

The results of multivariate regression analyses showed that all the learning environment factors, except competition for grades, yielded significant correlations with on-task-orientation, suggesting that the learning environment exercised a relatively large influence on on-task-orientation. The strongest predictor of on-task-orientation was students' perceptions of the meaningfulness of schoolwork. Almost equally strong was emotional support from teachers. Academic support, student influence and teacher monitoring had a more moderate direct effect on on-task-orientation. Moreover, the associations of perceptions of teachers' support and student influence with on-task-orientation were partly mediated via perceptions of the meaningfulness of schoolwork. Both academic and emotional teacher support were relatively strongly related to the meaningfulness of schoolwork, indicating that teacher support may help students find schoolwork more meaningful. Finally, the results of the descriptive analyses indicated considerable room for improvement in the areas of teachers' emotional support of students, students' influence on schoolwork and the meaningfulness of schoolwork.

## **4.2. Paper II**

### **“Coping styles and emotional and behavioural problems among Norwegian grade 9 students”**

The main aim of this study was to explore the relationship between coping styles and emotional and behavioural problems in adolescent students.

Results of analyses of frequency indicated that 43% of the students frequently or quite frequently used planning as a way of coping with problems at school. The majority of students, however, reported scores that indicated infrequent or very infrequent use of this coping style. The second most reported coping style was self-blame; nearly 40% of the students stated they blamed themselves frequently or quite frequently. Finally, the responses to items on coping styles indicated that a substantial minority of the students used the dysfunctional coping styles aggressive coping and behavioural disengagement.

Multiple multivariate regression analysis was estimated using Amos (Arbuckle & Wothke, 1999). The regression coefficients indicated how much each independent variable contributed to the variance explained in the three dependent variables. The results of this analysis showed that all variables assessing coping styles, except behavioural disengagement, accounted for a unique and significant variance in externalising problems beyond the effects of gender and school related stress. Aggressive coping was the strongest predictor of externalising problems. In addition, externalizing problems were moderately associated with less planning and self-blame. The corresponding analysis incorporating scores for emotional problems as a dependent variable indicated that such problems were associated with more self-blame and aggressive coping. Finally, analysis showed that off-task-orientation was associated with less planning, more aggressive coping and more behavioural disengagement.

Logistic regressions were conducted to better illustrate the strength of the associations between coping styles and emotional and behavioral problems. A comparison of the results of the multiple multivariate regression and the logistic regression also enabled an investigation into whether associations with coping styles differed for the more challenging emotional and behavioral problems and the more moderate ones. For all the dependent variables logistic regressions revealed a pattern of results similar to that computed by multiple multivariate

regression, suggesting that the same coping styles were predictors of more serious emotional and behavioural problems as well as of the more moderate problems.

### **4.3 Paper III**

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

Based on previous findings that associations between perceived learning environment and behavioural and emotional outcomes primarily were identified at the individual level, the main aim of the present study was to investigate the associations between learning environment factors and emotional and behavioural problems, and to what extent these associations could be accounted for by variations in individual students’ coping styles.

Results of variance accounted for in the dependent variables showed that about one third of the variances learning environment factors accounted for in emotional and behavioural problems was also accounted for by coping styles. This indicates that associations between learning environment factors and emotional and behavioural problems to some degree could be accounted for by students’ coping styles. Results showed that students’ coping styles were moderately associated with learning environment factors. However, two thirds of the covariance between learning environment factors and emotional and behavioural problems were not accounted for by individual students’ coping styles, indicating that learning environment factors affect emotional and behavioural problems uniquely. Together with the previous findings of associations between learning environment factors and emotional and behavioural problems at the individual level, 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 results showed

that the unique effect of learning environment factors on variances in off-task-orientation, externalising problems and emotional problems was 22%, 13% and 4%, respectively. All learning environment factors were associated with off-task-orientation, with teachers' emotional support and the meaningfulness of schoolwork as the strongest predictors. Teachers' academic support and teachers' monitoring presented the second strongest associations with off-task-orientation. The results related to externalising problems showed a similar pattern of associations. For emotional problems relationships between classmates were the main predictor, with teachers' academic support as the second strongest predictor.

Finally, the results showed few significant interactions between students' coping styles and learning environment factors, indicating that students' perceptions of the learning environment are not dependent on their coping styles to any great degree.

#### **4. 4 Paper IV**

##### **“Are changes in students' perceptions of the learning environment related to changes in emotional and behavioural problems?”**

More recent studies of the associations between learning environment factors and emotional and behavioural problems have shown that it is primarily the individual level of variance of perceived learning environment factors that accounts for variances in emotional and behavioural problems. One can therefore not rule out the possibility that the associations identified are primarily reflections of individual characteristics of the students, such as their coping styles. The main aim of this study was to explore this issue by utilizing a one-group pre-test post-test design to minimize the influence of individual characteristics on the associations of perceived learning environment with emotional and behavioural problems. Moreover, by connecting the study to a planned restructuring of the learning environment

occurring in a Norwegian secondary school the study also aimed at exploring how changes in the learning environment might affect emotional and behavioural problems.

The results of the mean scores from pre-test and post-test indicated that students' perceptions of the learning environment after the restructuring process were generally somewhat more positive than before the restructuring. However, the only clearly significant change was found for perceived student influence, whereas marginally significant improvements were found in students' perceptions of teachers' emotional support and teachers' monitoring. Regarding the dependent variables, results showed that students reported significantly more on-task-orientation and marginally significantly less emotional problems after the restructuring. On the other hand, reports of externalising problems had increased.

To test the assumption that associations between learning environment factors and emotional and behavioural problems could be reflections of personal characteristics further we conducted a within-subject comparison of changes in perceived learning environment factors and reports of emotional and behavioural problems. By adopting this approach we aimed at minimizing the influence of any individual characteristics. The results of partial correlations between the individual students' perceptions of changes in their learning environment and changes in emotional and behavioural problems showed that changes in off-task-orientation were significantly associated with changes in all learning environment factors, most strongly with the meaningfulness of schoolwork, teachers' emotional support and adaptation of schoolwork. Moreover, changes in externalising problems were most strongly related to changes in teachers' monitoring, emotional support and academic support. These factors were also significantly associated with changes in emotional problems, together with changes in student influence and the meaningfulness of schoolwork.

One final aim of the study was to investigate whether the changes in emotional and behavioural problems could be predicted by coping styles measured in pre-test. The results of partial correlations between students' report of coping styles at pre-test and scores of change for off-task-orientation, externalizing problems and emotional showed only a weak correlation between seeking social support at pre-test and (negative) changes of emotional problems.

## **5 DISCUSSION**

Results are discussed separately in each of the enclosed papers. Here, the main goal is to discuss the results in relation to each other and to the rationale of the thesis as formulated in the general study design.

### **5.1 The purpose of the study**

One of the main purposes of the present thesis is to investigate to what extent associations between learning environment factors and emotional and behavioural problems could be accounted for by variations in personal characteristics. This has been based on previous findings that the associations between perceived learning environment and behavioral and emotional outcomes primarily have been identified at the individual level. Students' coping styles have been included in the thesis as measurements of personal characteristics. A further purpose of the study is to explore the extent to which different learning environment factors relate to off-task-orientation, emotional problems and externalising problems. In addition to exploring how students' coping styles could influence the relationship between learning environment factors and emotional and behavioural problems, investigating the direct associations between students' coping styles and emotional and behavioral problems have also been of interest.

## 5.2 Coping styles and emotional and behavioral problems

The results of paper II indicate that the way students usually cope with academic and social stress at school is related to their reports of emotional and behavioural problems, also when these stress sources have been controlled for. In general, a similar pattern of relationship between coping styles and emotional and behavioural problems was found for the ten per cent of students with the most serious problems. Students who reported having *emotional problems* seem to have a tendency to blame themselves for academic and social problems at school and, moreover, to deal with such problems through aggressive responses. According to coping theory and research (e.g. Lazarus & Folkman, 1984) self-blame as well as aggressive coping are regarded as ineffective responses to stress that are also capable of increasing the level of stress. The link between self-blame and depression has been well documented in previous research (e.g. Compas, Malcarne & Fondacaro, 1988; Endler & Parker, 1994; Sandler, Tein & West, 1994). Our findings are in line with this. Although self-blame may stimulate taking responsibility and active ways of coping to a certain degree, as the positive correlations between self-blame and planning may well indicate, the results allow us to conclude that too much self-blame is negative and linked to internalising emotional problems.

The positive relationship between aggressive coping and emotional problems was viewed as somewhat unexpected. Emotional problems are, however, seen as a long-range outcome of ineffective coping responses (e.g. Lazarus, 1993; Lazarus & Folkman, 1984). Interpreted in light of this, an aggressive coping style may well over time lead to emotional problems, amongst other things. Moreover, the tendency to react with aggressive responses could also reflect poor outcome expectancies (Carver, Scheier & Weintraub, 1989; McCrae, 1982; McCrae, 1984), which in turn are related to emotional problems. Furthermore, aggressive coping could be seen as a sign of emotional instability, and, according to Eysenck's (1982) theory of personality, emotional instability could manifest itself both as

acting out behavioural problems and internalising emotional problems. However, among the students reporting emotional problems the tendency to blame themselves is likely to restrain externalising problem behaviour.

The tendency to use aggressive responses when dealing with problems at school was also related to *off-task-orientation*. This result supports the assumption that an aggressive coping style could lead to poor support from teachers, and poor support could in turn lead to difficulties in concentrating on schoolwork. The results of paper III indicating a negative relationship between aggressive coping and teacher support also support this interpretation (see 5.4 for further discussion about the indirect association between coping and emotional and behavioural problems). As mentioned above, aggressive coping could reflect emotional instability. This is believed to be related to restlessness (e.g. Eysenck, 1982) which could very well express itself as concentration problems at school. Planning was, however, the strongest predictor of off-task-orientation, indicating that little use of planning is related to increased concentration problems. Previous research has found associations between behavioural problems and poor social competence and problem solving skills (Fischler & Kenndall, 1988; Ogden, 1995; Sørli, 1998 b). Our finding supports the notion that poor problem solving skills could underlie concentration problems.

Planning was also negatively associated with *externalising problems*, although more weakly, which could indicate that the lack of problem solving skills was less predominant among students with externalising problems. However, aggressive coping was the main predictor of externalising problems. Among students with externalising problems aggressive coping could also be considered a result of emotional instability, poor impulse control and temperamental difficulties (Eysenck, 1982; Loeber, 1990; Kazdin, 1995; Rutter, Giller & Hagell, 1998). Moreover, the results of logistic regression indicate that the combination of frequent use of aggressive coping, frequent behavioural disengagement and very infrequent



use of planning raised the risk of being placed in the externalising problem group nearly ninefold. The link with behavioural disengagement could indicate poor staying power (related to temperamental difficulties) among students with externalising problems. The findings lend support to the assumption that much use of behavioural disengagement as a way of dealing with academic problems may lead to a vicious circle of negative expectations, lowered efforts and the experience of failure. In turn, failure may lead to frustrations expressed as hostile acts towards teachers or fellow students..

In paper III the unique effect of coping styles on emotional and behavioural problems, when controlling for learning environment factors, displayed a similar pattern of results as in paper II where school related stress had been controlled for. This indicates that measurements of school related stress can also act as reasonable measurements of the learning environment.

Furthermore, the results of paper III indicate that coping styles also affect emotional and behavioural problems indirectly through their effect on learning environment factors, in addition to their direct effect on reports of emotional and behavioural problems. For example students displaying an aggressive coping style have a tendency to report the learning environment more negatively. This indirect effect will be discussed in 5.4.

Finally, the results indicate that coping styles are good predictors of emotional and behavioural problems. However, the survey design of this study implies that caution must be exercised in making causal statements between variables.

### **5.3 Do learning environment factors uniquely affect emotional and behavioural problems?**

Previous research has found that associations between perceived learning environment and behavioural and emotional outcomes are primarily identified at the individual level (Anderman, 2002; Bru, Stephens & Torsheim, 2002). Such results have led us to conclude that we cannot rule out that the identified associations primarily being reflections of

individual characteristics of the students, such as coping styles, and not an indication that experiences of the learning environment affects emotional and behavioural problems. In paper III the inclusion of coping styles as measurements of individual factors enables this assumption to be tested. Another approach investigated how within-subject changes in the perceived learning environment are associated with changes in reports of emotional and behavioural problems (paper IV). In the latter approach the effects of individual characteristics have been minimized by studying the covariance of within-subject changes in perceptions of the learning environment and reports of emotional and behavioural problems.

In paper III results showed that when controlling for students' coping style the learning environment factors still accounted for a substantial amount of the variances in emotional and behavioural problems. Even though results indicate an overlap between variance accounted for by learning environment factors and coping styles, suggesting that associations to some degree could be reflections of students' coping styles, about two thirds of the total variance accounted for in emotional and behavioural problems by learning environment factors, could be ascribed solely to these factors.

In paper IV the results of comparison of the mean scores of students' perceptions of learning environment factors and reports of emotional and behavioural problems before and after the restructuring of the learning environment suggest that changes in the learning environment may affect emotional and behavioural problems. Consequently this does not support the assumption that association between learning environment factors and emotional and behavioural problems identified by previous research is merely a reflection of individual coping styles. To further test this assumption within-subject comparison of changes in perceived learning environment factors and reports of emotional and behavioural problems were conducted. Results here indicate that changes in perceptions of learning environment factors are related to changes in reports of emotional and behavioural problems. (See 5.5 for

discussion of relationship between learning environment factors and emotional and behavioural problems).

Finally, the results of paper II demonstrated the unique effect of academic and social stress at school on reports of emotional and behavioural problems, thus lending support to the assumption that learning environment factors have a unique effect on emotional and behavioural problems.

Together with the previous findings of associations between learning environment factors and emotional and behavioural problems at the individual level, and results of variance component analysis showing that class level variance components for variables assessing emotional and behavioural problems are moderate, from 1,3 to 5,1 percent (in paper III), these results might indicate that teachers treat students within the same class differently and thereby generate 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 emotional and behavioural problems. Further research is needed in order to explore how and why teachers seem to treat students in the same class differently.

#### **5.4 To what degree are associations between learning environment factors and emotional and behavioural problems accounted for by students coping styles**

In paper III, the results showed that one third of the variance learning environment factors accounted for in emotional and behavioural problems had also been accounted for by students' coping styles. This indicates that the associations between learning environment factors and emotional and behavioural problems to some degree could be reflections of students' coping styles, in the way that coping styles affect or color students' *perceptions* of the learning environment, or that students contributing to the *shaping* of the learning environment through their coping styles and thus affecting emotional and behavioural problems indirectly. The results indicating a relationship between coping styles and learning

environment factors, as well as the major view in psychology today that children's psychosocial development is dependent on personal factors as well as environmental factors and the interplay between these (e.g. Rutter & Maugham, 2002; Lazarus & Folkman, 1984), support these interpretations of the covariance found between coping styles and learning environment factors.

As stated, the covariance between learning environment factors and coping styles could indicate that coping styles that affect emotional and behavioural problems, may also affect or colour students' *perceptions* of the learning environment, suggesting that the associations between learning environment and emotional and behavioural problems to some degree could be spurious. The results of paper III indicate that students with an aggressive coping style and those who frequently employ behavioural disengagement in general perceive their learning environment more negatively, especially teacher support and the meaningfulness of schoolwork. These results are in line with previous findings indicating that individuals who display "acting-out" misbehaviour have an exaggerated tendency to blame others for their problems (Akhtar & Bradley, 1991; Kendall, 1993), and the notion that students who have a tendency to cope with academic problems by employing behavioural disengagement could easily lose interest in schoolwork and perceive it as having little meaning. Spurious associations could thus arise between learning environment factors and emotional and behavioural problems.

Another way of understanding the covariance between learning environment factors and coping styles is that students contribute to the *shaping* of the learning environment they meet (Scarr, 1992; Scarr & McCartney, 1983) through the way they usually cope with problems at school. This concurs with the view of the psychosocial development as a two-way process of continuous interplay between the individual and the environment. Through their behaviour, people are not only exposed to environmental influences but also contribute to

selecting and shaping the environment they experience (Scarr & Scarr, 1992). In the context of school influences, personal factors and environment will correlate when a student's behaviour evokes particular response patterns from teachers for example. Consequently the negative correlations between aggressive coping and teacher support (see paper III) suggest that students who 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. Teachers' negative responses may in turn affect students' behaviour, a situation that could with time lead to a vicious circle, negatively affecting both teachers' and students' behaviour. In this way students and their teachers create a shared, unsatisfactory learning environment (Bugental & Goodnow, 1998). From this interactional perspective the positive relationship between planning and teacher support and the negative relationship between behavioural disengagement and teacher support could indicate that students who cope with academic problems in a constructive way receive more positive attention and support from teachers than students who have a tendency to give in easily. This interpretation of the covariance between coping styles and learning environment factors implies a "real" indirect effect of coping styles on emotional and behavioural problems through the influence students make on their learning environment. Previous research has shown that children differ both in their perceptions and experiences of the school environment (e.g. Roeser & Eccles, 2002).

The present research design does not permit us to draw any further conclusions about these interpretations of the covariance between coping styles and learning environment in variances accounted for in emotional and behavioural problems. It would be of interest if further research better identified spurious or indirect effects, respectively. One possible approach would be to include personal characteristics that are less related to behaviour than are coping styles, for example perceptual styles in addition to coping styles.

Finally, the present study poses one last question about the interplay between coping styles and learning environment in relation to emotional and behavioural problems, namely whether the same learning environment could produce different responses among students, dependent of their coping styles. Such person-environment interactions may be implicated when children with differing abilities or temperamental characteristics offer varying responses to the same classroom or school setting (Rutter & Silberg, 2002). In paper III the results demonstrated only a few weak significant interactions between coping styles and learning environment factors. This question was followed up in paper IV where we asked whether key elements of the restructured learning environment may have better suited some students than others, dependent of their coping styles. The results of partial correlations between students' reports of coping styles at pretest and changes in the scores for off-task-orientation, externalising problems and emotional problems did not support this. It is thus in line with the results of paper III. That the results indicate so few significant interactions was somewhat unexpected. One possible explanation could be that the variations in learning environment may not be great enough to compensate for students' individual coping styles, or that the changes in the learning environment describes in paper IV are not great enough to generate differential effects for students with different coping styles. A further explanation for the lack of associations between pretest scores for coping styles and change scores for emotional and behavioural problems may be that the increased focus on adaptation to the individual student may have counteracted the more structural changes of the restructuring.

## **5.5 Relationships between learning environment factors and emotional and behavioural problems**

The results of paper III indicate that about two thirds of the covariance that learning environment factors explained in variances in emotional and behavioural problems were explained solely by learning environment factors. Therefore we have to ask how the different

learning environment factors can be related to the different forms of emotional and behavioural problems. This question has been thoroughly discussed in papers I, III and IV. In this section the main findings will be discussed and related to the theoretical basis of the thesis, i.e. a need based approach to the understanding of the learning environment.

In paper III the results indicate that learning environment factors are most strongly related to off-task-orientation and weakest to 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. The results of paper IV indicate the same pattern. Off-task-orientation is the outcome variable most closely connected to learning activities and motivational conditions. It is therefore not surprising that this variable demonstrated the strongest relationship with the learning environment factors. Externalising problems, on the other hand, may to a greater degree be related to other factors in the school environment, such as social factors not directly related to learning activities. Attitudes among peers concerning how to behave towards adults could provide one example of this. Such factors have not been included in the present study. Relationships with peers at school probably also play an important role in 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, the weak associations between learning environment factors and emotional problems may possibly indicate that teachers do not possess the competence needed to support students with emotional problems to a sufficient degree such that they could prevent or reduce such problems.

The results in papers I, III and IV presented significant associations between most of the learning environment factors and emotional and behavioural problems. Off-task-orientation is in fact significantly related to all learning environment factors. However, some of the learning environment factors emerge as stronger predictors of emotional and

behavioural problems than the others. Among these, emotional support from teachers and perceptions of the meaningfulness of schoolwork stand out. The results of paper I demonstrated a relatively strong direct association between emotional support and on-task-orientation and an even stronger indirect association through students' perceptions of the meaningfulness of schoolwork. Furthermore, an almost equally strong indirect relationship was found for academic support. This suggests that teacher support, both emotionally and academically, affects students' perception of the meaningfulness of schoolwork, which in turn is strongly related to outcome variables, especially concentration problems. In paper III the results showed that emotional support was relatively strongly (negatively) related to off-task-orientation as well as externalising problems. Any association with emotional problems was barely significant. Changes in emotional support also emerge in paper IV as a strong predictor of changes primarily in off-task-orientation but also in externalising problems and emotional problems. Here it is interesting to note the different results with regard to the effect on emotional problems. However, caution must be exercised when generalizing this result since the study was undertaken in one single school.

Taken together, results indicate that for students to perceive their teachers as emotional supportive is important in order to reduce especially behavioural problems at school. Seen in the light of the need based approach to the understanding of the learning environment, emotional support from teachers may have these beneficial effects on students behaviour and emotional well-being because positive and supportive relationships between teachers and students are seen as fundamental in order to develop a learning environment where students' need for connectedness or relatedness are being met (e.g. Barber & Olsen, 1997; Connell & Wellborn, 1991; Deci & Ryan, 2000). As a result students becoming affectively bonded with and committed to the school, and therefore inclined to identify with and behave in accordance with its expressed goals and values (Finn, 1989). Committedness to teachers and school may



also increase students' willingness to spend time and effort on tasks, also tasks that may not be seen as inherently interesting (Harter, 1996; Ryan & Deci, 2002). This suggests that relatedness is centrally important for internalisation of values, behaviour and engagement in tasks (Roeser, Eccles & Sameroff, 2000; Ryan, Stricker & Lynch, 1994). Moreover, warm and supportive relationships with teachers may also improve psychosocial development through positive effects on students' self-esteem (e.g. Davial et al, 1995; Harter, 1996). Finally, positive relationships with teachers are also regarded to be important for the development of a competence promoting learning environment.

Students' perceptions of the meaningfulness of schoolwork stand out as another important learning environment factor in this study. The meaningfulness of schoolwork was included in Paper I as a mediating variable. The results of this paper indicated that this variable had the strongest relationship with on-task-orientation. In paper III the meaningfulness of schoolwork was significantly associated with all three outcome variables, most strongly with off-task-orientation, somewhat weaker with externalising problems and weakest with emotional problems. The results of paper IV showed a somewhat different pattern: positive change in the meaningfulness of schoolwork was related to reductions in concentration problems as well as emotional problems, but with a non-significant positive change in externalizing problems. Viewed together the results indicate that students perceiving their schoolwork as meaningful is of vital importance for their behaviour as well as their emotional well-being in school.

Moreover, the results of paper I indicate that many students have problems with finding their schoolwork meaningful. Why is that? The relationship between emotional and academic support and the meaningfulness of schoolwork, in paper I, may indicate that students to some degree experience the (same) subject content differently, dependent on the teachers' capacity or skill in arranging a caring and supportive learning environment.

Furthermore, the unique effect of the meaningfulness of schoolwork (in paper III) leads us to assume that the content of school subjects is also likely to be reflected in the students' perceptions of the meaningfulness of schoolwork. It is also likely that negative attitudes towards schoolwork "as something boring you just have to do" could be reflected in perceptions of the meaningfulness of schoolwork.

The importance of the perceived meaning of schoolwork is in line with the theoretical approach where the satisfaction of students' need for competence is seen as vital for a positive psychosocial development (Connell & Wellborn, 1991; Harter, 1996). In satisfying the need for competence, the feeling of adequacy must also be related to valued outcomes, that is to something important or meaningful (Eccles, 1983). Students' perceptions of the meaningfulness of schoolwork could then become an important factor in satisfying their need for competence. When students value (perception of meaningfulness or relevance) what they are doing, and they believe (from previous experience) that that they can be successful at it, they will be motivated to try so that successful experiences will promote feelings of competence.

Moreover, to provide students with adequate academic support, individual guidance and an individually adapted study plan may also increase the possibility of success and hence promote competence. The results of the present study are in accordance with this assumption of the importance of an adapted learning environment (e.g. Vygotsky, 1978): In paper I results indicate a moderate relationship between academic support and on-task-orientation, and in paper III and IV academic support are related to all three outcome variables. Teacher guidance and adaptation of schoolwork are included as predictors of emotional and behavioural problems in paper IV. Here, results indicate that positive change in teacher guidance is significantly related to a reduction in off-task-orientation, and that improvements in the adaptation of the schoolwork have been significantly related to

reductions in off-task-orientation as well as in externalising problems. Taken together, the results and theory may indicate that meaningful schoolwork together with relevant and adapted support and schoolwork could be important factors in increasing the possibility of students feeling competent and thus contributing to a positive psychosocial development, for example through positive effects on motivational orientation (Harter, 1996; Ryan & Deci, 2000), engagement in tasks (Connell & Wellborn, 1991) and on students' self esteem (Harter, 1996).

Student influence is another interesting variable worth discussing, not because it is strongly associated with outcome variables, but rather because the results are somewhat conflicting, indicating that student influence to a certain degree could be a double-edged sword. Moreover, one of the main goals/principals of restructuring the learning environment described in paper IV was to increase student influence on decisions regarding their schoolwork.

The results of paper I showed moderately positive associations between student influence and on-task-orientation, while the results of paper III indicated a moderately negative association between student influence and off-task-orientation and a scarcely significant, although negative, association with externalising problems. This may indicate that student influence could lead to reductions in concentration problems and weak reductions in externalising problems. In paper IV the results of within-subject comparisons of changes in perceptions of learning environment factors and reports of emotional and behavioural problems, are in line with the results of paper I and III, although the pattern of relationships are somewhat different. Here the results indicate that increased student influence is related to reductions in all outcome variables, although the association with externalising problems is not significant. Interestingly, student influence emerged as the strongest predictor of emotional problems. Taken together, these results suggest that for students to perceive that

they can influence their own learning activities could be beneficial for their behaviour as well as emotional well-being in school.

However, the results of paper IV of a comparison of the mean scores before and after the restructuring of the learning environment produced some conflicting results. The only clearly significant positive change in learning environment factors from pre-test to post-test was computed for student influence. The improvement was large. In addition, the results suggest weak improvements in perceptions of teacher monitoring and emotional support from teachers. As far as the mean scores for dependent variables are concerned, the results indicate a significant improvement in concentration and a marginally significant reduction in reported emotional problems. On the other hand, the results indicate a slight increase in externalising problems. Together with the changes in perceived learning environment factors the results seem to support the notion that an increase in student influence, and to a certain degree an increase in emotional support and monitoring, are related to an improvement in student concentration and a weak reduction in emotional problems. However, in contrast to the other results, these seem to indicate that an improvement in student influence could also lead to increased risk of externalising problems.

These conflicting results could provide some indications of student influence as a double-edged sword. For some students increased autonomy could imply an increased possibility of pursuing goals that are in conflict with school norms or learning goals; this may result in increased occurrence of externalising problems. It is important to be aware of the possibility that some students could take advantage of a learning environment characterized by increased student influence. We might assume that any possible negative effects of increased student influence could be reduced by effective organisation and monitoring schoolwork. However, more research is needed to explore the relationship between student influence and externalising problems.

After taking everything into consideration the main conclusion is that student influence positively affects student behaviour and emotional well-being. According to self-determination theory (e.g. Ryan & Deci, 2000), student influence is an important factor in promoting autonomy supporting learning environment. Satisfying the need for autonomy is seen as vital for a healthy psychosocial development (e.g. Barber & Olsen, 2004; Ryan & Deci, 2000). Student perception of their influence on their own learning situation, both in the form of teachers listening to them and involving them in planning and shaping learning activities, is assumed to be important for promoting a learning environment where students feel a sense of autonomy or self-determination (Connell, 1990; Deci & Ryan, 1985; Ryan & Deci, 2000, 2002). Research indicates that an autonomy supporting learning environment has many positive effects, for example on academic competence, emotionality, motivational styles, effort and engagement in learning activities (e.g. Connell & Wellborn, 1991; Deci et al, 1981; Reeve, 2002; Ryan & Deci, 2000). Moreover, an autonomy supporting learning environment also appears to facilitate students' self-regulated learning with the positive effects that may have on effort and engagement (Newman, 2000). Finally, a learning environment supporting autonomy also possesses the potential to increase students' feeling of personal control. According to the theories of attribution and control (Weiner, 1986), the internal locus of control seems to positively influence emotional well-being and mental health (Lazarus, 1999).

On the other hand, in classrooms where teachers assert a great deal of control by offering students few provisions for self-determined behaviour, students are more likely to feel that their behaviour is controlled by external factors. Such practices can potentiate both emotional and behavioural problems (Roeser & Eccles, 2000). Few opportunities for autonomy seem also to be related to poor valuing of school (Roeser, Eccles & Sameroff, 2000), which in turn could effect both motivation and behaviour in a negative way.

Positive and supportive relationships between teachers and students may be regarded as fundamental to a learning environment that promotes positive behaviour and emotional well-being among students. Teachers who have a positive relationship with their students are probably more able than others to take the individual student's perspective and adapt their support to different students' need. Emotional support implies that teachers care about their students and show interest in different aspects of their lives. However, teachers also demonstrate emotional support by caring about students' schoolwork and progress. The possibly increased awareness of students' needs resulting from positive relationships could make it easier for teachers to adapt their assistance to the individual student. This could, in turn, increase students' interest in their schoolwork and render it more meaningful. In paying attention to their students' needs, teachers who have positive and supportive relationships with their students are probably also more willing to involve them in planning and shaping learning activities and listening to their opinions about classroom life. These assumptions are supported by the significant correlations found (in papers I and III) between emotional support and other learning environment factors. Finally, positive correlations between emotional support and monitoring also underline the notion that effective monitoring must be based on positive relationships between teachers and students.

In summary, the results indicate that caring about students, both personally and academically, allowing them to influence their life at school, together with effective monitoring and measures for making schoolwork more meaningful are important factors in a learning environment that could promote positive behaviour and emotional well-being in students. This interpretation is in line with the theoretical approach where the quality of the learning environment is viewed in relation to how well it is characterized by supportive and positive relationships, by student influence and participation, by competence supportive

factors and positive regulations. Both theory and research consider these as fundamental dimensions for positive psychosocial development in and out of school.

## **5.6 Concluding remarks to methodological considerations and suggestions for further research**

It has been the intention of this thesis to shed some light on the complex interplay between learning environment, students' coping styles and emotional and behavioural problems. However, due to limitations in methodological approaches and the complexity of the theme it has only been possible to present parts of the overall picture. Moreover, the results reported here have revealed a need for further research.

With regard to individual characteristics able to influence the relationship between learning environment factors and emotional and behavioural problems, other factors than students' coping styles ought to be included as covariates in further research, for example measures of performance anxiety, motivational styles or learning strategies. Moreover, the present research design did not permit us to draw any further conclusions about the interpretations of the covariance between coping styles and learning environment. It would be of interest if further research better identified spurious or indirect effects, respectively. One possible approach would be to include personal characteristics that are less related to behaviour than are coping styles, for example perceptual or motivational styles, in addition to coping styles. It would be of special interest to increase the knowledge about how students contribute to the shaping of their learning environment, and also for schools and teachers to be aware of this.

Furthermore, a strength of the present thesis was the ability for doing within-subject comparisons of changes in students' perceptions of the learning environment with changes in reports of emotional and behavioural problems, thus minimizing errors due to individual characteristics influencing the relationships between independent and dependent variables.

This approach made it possible to examine the effect of personal factors on associations between learning environment factors and emotional and behavioural problems in a better way, and thus make our conclusions about unique effects of learning environment factors on emotional and behavioural problems more reliable.

The findings of this study, together with previous research, made us conclude that teachers treat students within the same class differently and thereby generate variations in the quality of the learning environment experienced by different students in the same class. This conclusion implies that students in the same class experience their “own” learning environment. Further research is needed in order to examine how and why teachers seem to treat students in the same class differently. To focus on the practical implications of increased knowledge in this area will also be of importance.

With regard to associations between learning environment factors and emotional and behavioural problems, the somewhat conflicting results of associations of student influence with externalising problems indicate that more research is needed to explore this relationship. It would be of interest to investigate how teachers may increase student influence without negative consequences for any groups of students. Observational studies in classrooms could be one way to approach this, but also experimental designs allowing for different degrees of student influence.

Due to the survey design that parts of this thesis rest on caution must be exercised in making causal statements between learning environment factors and emotional and behavioural problems. However, an advantage of the one-group pretest-posttest design is a higher level of qualification with which we could suggest the causes and effects of relationships between variables than the survey design study allowed us to do. The restructuring of the learning environment could be seen as an “experimental manipulation”, which gave us some possibility to test if changes in the learning environment on one side



could produce changes in emotional and behavioural problems on the other side. However, also here, especially due to the lack of a control group, conclusions about causal inferences between variables must be done with caution. One should bear in mind the difficulty of guarding against irrelevant factors contributing to changes in dependent variables, and consequently affecting the study findings. Maturation is another threat to internal validity. An attempt was made to compensate for this by adjusting post-test scores for the general age trend.

All for papers draw on information given by way of questionnaires completed by the respondents themselves. The results consequently reflect the respondents' perceptions of their learning environment, coping styles and behaviour and are not therefore to be considered as objective data. Response set, the tendency for individual to use certain types of responses, for instance extreme or neutral ones, could cause bias in the data. However, according to Kerlinger and Lee (2000) this is considered to be only a mild threat to valid measurements and should not be overestimated. Previous research indicates that aggregate scores for students' perceptions of learning environment factors correspond well with observational data of learning environment (De Jong & Westerhof, 2001). Further research employing observations in classrooms could add important information in this field. Finally, regarding measurements of coping, the instruments implemented primarily assessed the frequency of coping responses. For further research measurements that to a greater degree could grasp the quality of coping efforts could prove useful. In-depth interviews, for instance, could reveal more about the quality of coping responses.



## 6 REFERENCES

- Abramson, L.Y., Garber, G. & Seligman, M.E.P. (1980). Learned helplessness in humans: An attributional analysis. In J. Garber & M.E.P. Seligman (Eds.), *Human helplessness: Theory and applications*. New York: Academic Press.
- Achenbach, T.M., Howell, C. T., Quay, H. C. & Conners, C. K. (1991). *National Survey of problems and competencies among fourteen to sixteen year olds*. (Vol. 56).
- Achenbach, T. M., Dumenci, L. & Rescorla, L.A. (2002). Ten-year comparisons of Problems and competencies for national samples of youth: Self, parent and teacher reports. *Journal of Emotional and Behavioral Disorders*, 10, 194-203.
- Ainsworth, M.D., Blehar, M.C., Waters, E. & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Aldwin, C. M. (1994). *Stress, Coping and Development: An Integrative Perspective*. New York: Guilford Press.
- Anastasi, A. & Urbina, S. (1997). *Psychology testing* (7<sup>th</sup> ed.) Upper Saddle River NJ: Prentice-Hall.
- Anderman, E. (2002). School Effects on Psychological Outcomes During Adolescence. *Journal of Educational Psychology*, 94, 795-808.
- Armacost, R.L. (1989). Perceptions of stressors by high school students. *Journal of Adolescent Research*, 4, 443-461.
- 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.
- Arbuckle, J.L. & Wothke, W. (1999). *Amos 4.0 user's guide*. Chicago: SPSS.
- 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.
- Bandura, A (1997). *Self-efficacy: the exercise of control*. New York: Freeman.
- Barber, B.K.. (1997). Introduction: Adolescent Socialization in Context-Connection, Regulation, and Autonomy in Multiple Context. *Journal of Adolescent Research*, 12 (2), 173-177.
- Barber, B.K., & Olsen, J.A. (1997). Socialization in Context: Connection, regulation, and autonomy in the family, school, and neighbourhood and with peers. *Journal of Adolescent Research*, 12, 287-315.
- Barber, B.K. & Olsen, J. A. (2004). Assessing the transitions to middle and high school. *Journal of Adolescent Research*, 19, 3-30.
- Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology Monographs*, 4, 1-102.
- Baumrind, D. (1989). Rearing competent children. In W. Damon (Ed.). *Child development today and tomorrow*. San Francisco: Joesy-Bass Publishers.
- Belsky, J., Lerner, R.M. & Spainer, G.B. (1984). *The child in the family*. New York: Random House.
- Berndt, T.J. & Keefe, K. (1996). Friends' influences on school adjustment: A motivational analysis. In J. Juvonen & K.R. Wentzel (Eds.), *Social motivation. Understanding children's school adjustment*. Cambridge: Cambridge University Press.
- Bowlby, J. (1982). *Attachment and loss: Volume 1, attachment* (2<sup>nd</sup> ed.). New York: basic Books.
- Boggiano, A.K., Flink, C., Shields, A., Seelbach, A., & Barrett, M. (1993). Use of techniques promoting students' self-determination: Effects on students' analytic problem-solving skills. *Motivation and Emotion*, 17, 866-879.

- Bretherton, I. & Munholland, K.A. (1999). Internal working models in attachment relationships: A construct revisited. In J. Cassidy & P.R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications*. New York: Guildford Press.
- Bru, E., M., 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*, 44, 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. & Martinsen, T. (2002). Students' perceptions of teachers' class management styles and their report of misbehaviour. *Journal of School Psychology*, 40, 287-307.
- 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 Research*, 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.
- Byberg, T.K. & Tybring, S.M. (2004). *Læringsmiljø og konsentrasjon blant elever på barnetrinnet (5.,6. og 7.trinn) og ungdomstrinnet*. Hovedoppgave i spesialpedagogikk. Stavanger: Høgskolen i Stavanger [Learning environment and on-task-orientation among Norwegian students from 5<sup>th</sup> to 10<sup>th</sup> grade].
- Baard, P.P, Deci, E.L. & Ryan, R.M. (2000). *Intrinsic need satisfaction: A motivational basis*

- of performance and well-being in work settings*. Unpublished manuscript, Fordham.
- 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.
- 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.
- Collishaw, S., Maughan, B., Goodman, R. & Pickles, A. (2004). Time trends in adolescent mental health. *Journal of Child Psychology and psychiatry*, 45, 1350-1362.
- Compas, B.E., Malcarne, V.L., & Fondacaro, K.M. (1988). Coping with stressful events in older children and young adolescents. *Journal of Consulting and Clinical Psychology*, 56, 405-411.
- Connell, J.P. (1990). Context, self, and action: A motivational analysis of self-system processes across life-span. In D. Cicchetti & M. Beeghly (Eds.), *The self in transition: infancy to childhood* (pp. 61-97). Chicago: The university of Chicago Press.
- Connell, J.P. & Wellborn, J.G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M.R. Gunnar & L.A. Sroufe (Eds.), *The Minnesota Symposia on Child Psychology*, 23 ( pp. 43-77). Hillsdale, N.J.: Erlbaum.

- Cook, T.D. & Campbell, D.T. (1979). *Quasi- Experimentation. Design & Analysis Issues for Field Settings*. Boston: Houghton Mifflin Company.
- Costa, P.T., Somerfield, M.R., & McCrae, R.R (1996). Personality and coping: A Reconceptualization. In M. Zeidner & N.S. Endler (Eds.). *Handbook of coping: Theory, research, applications* (pp. 44-61). New York: Wiley.
- Covington, M.V. (1984). The motive for self-worth. In R. Ames & C. Ames (Eds.), *Research on motivation in education*. New York: Academic Press.
- Darling-Hammond, L. (1996). The right to learn and the advancement of teaching: Research, policy, and practice for democratic education. *Educational Researcher*, 25, 5-17.
- Davial, J., Hammen, C., Burge, D., Paley, B. & Daley, S. (1995). Poor interpersonal problem solving as a mechanism of stress generation in depression among adolescent women. *Journal of Abnormal Psychology*, 104, 592-601.
- Deci, L. M. & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, D.L., Schwartz, A.J., Sheinman, L. & Ryan, R.M. (1981). An instrument to assess adults' orientation toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Education and Psychology*, 73, 642-650.
- Deci, L. M. & Ryan, R. M (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska Symposium on Motivation: Vol. 38. Perspectives on motivation* (pp 237-288). Lincoln: University of Nebraska Press.
- Deci, E. L. & R. M. Ryan (1992). The initiation and regulation of intrinsically motivated learning and achievement. In T. S. Pittman and A. Boggiano (Eds.), *Achievement and motivation. A social-developmental perspective*. New York: Cambridge University Press.

- De Jong, R. & Westerhof, K.J. (2001). The quality of student ratings of teacher behaviour. *Learning Environment Research*, 4, 51-85.
- Derogatis, L.R., Limpman, 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.
- 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. & Carter, K. (1987). How order is achieved in the classroom. In N. Hastings and 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.
- Dweck, C.S., & Wortman, C.B. (1982). Learned helplessness, anxiety, and achievement motivation: Neglected parallels in cognitive, affective, and coping responses. In H. Krohne & L. Laux (Eds.), *Achievement, stress, and anxiety* (pp. 93-125). Washington, DC: Hemisphere.
- Ebata, A.T. & Moos, R.H. (1991). Coping and adjustment in distress and healthy adolescents. *Journal of Applied Developmental Psychology*, 17, 33-54.
- Ebata, A.T., & Moos, R.H. (1995). Personal, situational, and contextual correlates of coping in adolescence. *Journal of research on Adolescence*, 4, 99-125.
- 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., Wigfield, A., Buchanan, C.M., Reuman, D., Flanagan, C. &



- MacIver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and families. *American Psychologist*, 48, 90-101.
- Eccles, J.S., Early, D., Frasier, K., Belansky, E. & McCarthy, K. (1997). The relation of connection, regulation, and support for autonomy to adolescents' functioning. *Journal of Adolescent Research*, 12, 263-286.
- Eccles, J. S. & Midgley, C. (1988). Stage-environment fit: Developmentally appropriate classrooms for young adolescents. In R. Ames & C. Ames (Eds.), *Research on Motivation in education, goals and cognitions* (Vol.3, pp. 139-186). New York: Academic Press.
- Eccles, J.S. & Midgley, C. (1990). Changes on academic motivation and self-perceptions during early adolescence. In R. Montemayor, G. Adams & T.P. Gullotta (Eds.), *Advances in adolescent development. From childhood to adolescence*. (Vol. 2, pp 134-155). Newbury Park: CA: Sage.
- Elkind, D. (1981). *The hurried child*. Massachusetts: Addison-Wesly publishing Co.
- Endler, N.S. & Parker, J.D.A. (1994). Assessment of multidimensional coping: Task, emotion, and avoidance strategies. *Psychological Assessment*, 6, 50-60.
- Ertesvåg, S. (2003). Trening av sosial kompetanse. Trening for alle elever eller for elever med vanskar i slik kompetanse? *Norsk Pedagogisk Tidsskrift*, 5-6, 282-296.
- Evenshaug O. & Hallen, D. (1993). *Barne- og ungdomspsykologi*, 3. utgave. Oslo: Ad Notam Gyldendal.
- 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.
- Finn, J. (1989). Withdrawing from school. *Review of Educational Research*, 59, 117-142.

- 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.
- Fischler, G.L. & Kenndall, P.C. (1988). Social cognitive problem solving: Qualitative and topological analyses. *Cognitive Therapy and Research*, 12, 357-364.
- Flink, C., Boggiano, A.K. & Barrett, M. (1990). Controlling teaching strategies: Undermining children's self-determination and performance. *Journal of Personality and Social Psychology*, 59, 916-924.
- Fraser, B. J. & Fisher, D. L. (1982). Predicting students' outcomes from their perceptions of classroom psychosocial environment. *American Educational Research Journal*, 19, 498-518.
- Frydenberg, E. & Lewis, R. (1991). Adolescent coping styles and strategies. Is there functional and dysfunctional coping? *Australian Journal of Guidance and Counselling*, 1, 35-43.
- Gall, M.D., Borg, W.R. & Gall, J.P. (1996). *Educational research* (6<sup>th</sup> ed.). N.Y.: Longman Publishers.
- Gamble, W. C. (1994). Perceptions of controllability and other stressor event characteristics as determinants of coping among adolescents and young adults. *Journal of Youth and Adolescence*, 23, 65-84.
- Grolnick, W.S. & Ryan, R.M. (1987). Autonomy support in education: Creating the facilitating environment. In N. Hastings & J. Schwieso (Eds.), *New directions in educational psychology, Vol. 2: Behaviour and motivation*. London: Falmer Press.
- Harter, S. (1983a). Competence as a dimension of self-evaluation: Toward a comprehensive model of self-worth. In R. Leahy (Ed.), *The development of self* (pp. 55-121). New York: Academic Press.

- Harter, S. (1992). The relationship between perceived competence, affect, and motivational orientation within the classroom: Process and patterns of change. In A.K. Boggiano & T. Pittman (Eds.), *Achievement and motivation: A social-developmental perspective*. New York: Cambridge University Press.
- Harter, S. (1993). Causes and consequences of low self-esteem in children and adolescents. In R. F. Baumeister (Ed.), *Self-esteem: The puzzle of low self-regard*. New York: Plenum.
- Harter, S. (1996). Teacher and classmate influence on scholastic motivation, self-esteem, and level of voice in adolescents. In J. Juvonen & K.R. Wentzel (Eds.), *Social Motivation: Understanding children's school adjustment*. Cambridge: Cambridge University Press.
- Harter, S. & Connell, J.P. (1984). A model of the relationship among children's academic achievement and their self-perceptions of competence, control, and motivational orientation. In J. Nichols (Ed.), *The development of achievement motivation* (pp 219-250). Greenwich: CT: JAI Press.
- Ilardi, B.C., Leone, D., Kasser, T. & Ryan, R.M. (1993). Employee and supervisor rating of motivation: Main effect and discrepancies associated with job satisfaction and adjustment in factory setting. *Journal of Applied Social Psychology*, 23, 1789-1805.
- Judd, C.M., Smith, E.R. & Kidder, L.H. (1991). *Research Methods in Social Relations* (6<sup>th</sup> ed.). New York: Harcourt Brace Jovanovich College Publishers.
- Juvonen, J. & Weiner, B. (1993). An attributional analysis of students' interactions: The social consequences of perceived responsibility. *Educational Psychology Review*, 5, 325-345.
- Karasek, R.A & Theorell, T (1990). *Stress, Productivity, and the Reconstruction of Working Life*. New York: Basic Books, Inc., Publishers.
- Katz, L. (1988). *What should children be doing?* Rattler Spring, 4-6.

- Katz, L. (1995). *Talks with teachers of young children*. Ablex, Norwood, NJ.
- 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.
- Kerlinger, F.N. & Lee, H.B. (2000). *Foundations of Behavioral Research*. Fourth Edition. United States: Wadsworth, Thomson Learning.
- Kliewer, W., Sandler, I. & Wolchik, S. (1994). Family socialization of threat appraisal and coping: Coaching, modeling, and family context. In F. Nesmann & K. Hurrelman (Eds.), *Social networks and social support in childhood and adolescence*. New York: Walter de Gruyter.
- Knight, B.A. (1995). The influence of locus of control on gifted and talented students. *Gifted Education International*, 1, 3-31.
- Kohn, A. (1996). *Beyond discipline: from compliance to community*. Association for Supervision and Curriculum Development, Alexandria, VA.
- Kouzma, N.M. & Kennedy, G.A. (2004). Self-reported sources of stress in senior high school students. *Psychological Reports*, 94, 314-316
- Lamarine, R. (1995). Child and adolescent depression. *Journal of School Health*, 65, 390-394.
- Lazarus, R. S. & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer Publishing Company.
- Lazarus, R.S. (1993a). Coping theory and research: Past, present, and future. *Psychosomatic Medicine*, 55, 234-247.

- Lazarus, R.S. (1993b). From psychological stress to emotions: A history of changing outlooks. *In Annual review of psychology, 1993*, 1-21. Palo Alto: Annual Reviews.
- Lazarus, R.S. (1999). *Stress and emotion. A new synthesis*. London; Springer Publishing Company.
- Linn, R.L. & Gronlund, N.E. (1995). *Measurement and assessment in teaching* (7<sup>th</sup> ed.) Upper Saddle River, NJ: Prentice-hall Inc.
- 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.
- Loeber, R. (1990). Disruptive and antisocial behavior in childhood and adolescence: Development and risk factors. In K. Hurrelmann & F. Løsel (Eds.), *Health hazards in adolescence*. Berlin: Walter de Gruyter.
- Maccoby, E.E., & Martin, J.A. (1983). Socialization in the context of the family: Parent-child interaction. In P.H. Mussen (Series Ed.) & M.E. Hetherington (Ed.), *Handbook of child psychology. 4. ed. Vol 4: Socialization, personality, and social development*. New York: Wiley.
- McCrae, R. (1982). Age differences in the use of coping mechanisms. *Journal of Gerontology, 37*, 454-460.
- McCrae, R. (1984.) Situational determinants of coping responses: Loss, threat, and challenge. *Journal of Personality and Social Psychology, 46*, 919-928.
- McCrae, R.R., & Costa, P.T. Jr. (1986). Personality, coping, and coping effectiveness in an adult sample: *Journal of Personality, 54*, 385-405.
- 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.
- Mortimore, P. (1998). *The road to improvement: Reflections of school effectiveness*. Lisse: Swets & Zeitlinger Publishers.
- Murberg, T.A. (2004). Social Support, Negative Life Events and Emotional problems among Norwegian Adolescents. *School Psychology International*, 25, 387-404.
- Murray, C. & Greenberg, M.T. (2000). Children's Relationship with Teachers and Bonds with School. An Investigation of Patterns and Correlates in Middle Childhood. *Journal of School Psychology*, 38, 423-445.
- Murray, D.M. & Hannan, P.J. (1990). Planning for appropriate analysis in school-based drug-use prevention studies. *Journal of Consulting and Clinical Psychology*, 58, 458-468.
- Newcomb, A.F., Bukowski, W. M. & Pattee, L. (1993). Children's peer relations: A meta-analytic review of popular, rejected, neglected, controversial and average sociometric status. *Psychological Bulletin* 113, 99-128.
- Newman, R.S. (2000). Social influences on the development of children's adaptive help seeking: The role of parents, teachers, and peers. *Developmental Review*, 20, 350-404.
- Nicholls, J.G. (1984). Achievement motivation: conceptions of ability, subjective experience, task choice, and performance. *Psychological Review*, 9, 328-346.
- Nordahl, T. & Sørli, M.A. (1998). *Problematferd i skolen. Hovedfunn, forklaringer og pedagogiske implikasjoner*. Oslo, NOVA. Rapport 12a/98.. [Problem Behaviour in School. Main results, explanations and educational implications; in Norwegian].
- Norusis, M.J. (1985) *SPSS/PC+ for the IBM PC/XT AT*. Chicago, IL, SPSS Inc.
- Norusis, M.J. (2000). *Guide to data analysis*. Chicago, IL: Prentice Hall.
- Norway, S. (1994). *Standard Classification of Municipalities 1994*. Oslo: Statistics Norway.
- Nunnally, J.C., & Bernstein, I.H. (1994). *Psychometric theory* (3<sup>rd</sup> ed.). New York: Mc-Graw-

Hill.

- Ogden, T. (1995). *Kompetanse i kontekst: En studie av risiko og kompetanse hos 10- og 13-åringar. Rapport 3*. Oslo: Barnevernets utviklingscenter. [Competence in Context: a study of risk and competence among 10 and 13 year olders; in Norwegian].
- Otto, L.B. & Atkinson, M.P. (1997). Parental involvement and adolescent development. *Journal of Adolescent Research, 12*, 68-89.
- Parker, J.D.A. & Endler, N.S. (1996). Coping and defense: A historical overview. In M. Zeidner, & N.S. Endler (1996). *Handbook of coping: Theory, research and applications* (pp 3-23). New York; Wiley.
- Patrick, B.C., Skinner, E.A. & Connell, J.P. (1993). What motivates children's behavior and emotion? Joint effects of perceived control and autonomy in the academic domain. *Journal of Personality and Social Psychology, 65*, 781-791.
- Recklitis, C.J. & Noam, G.G. (1999). Clinical and developmental perspectives on adolescent coping. *Child-Psychiatry-and-Human-Development, 30*, 87-101
- Reeve, J. (2002). Self-determination theory applied to educational settings. In E.L. Deci & R.M. Ryan (Eds.), *Handbook of self-determination research* (pp 183-203). Rochester, NY: University of Rochester Press.
- Reeve, J., Jang, H., Carrell, D., Jeon, S. & Barch, J. (2004). Enhancing students' engagement by increasing teachers' autonomy support. *Motivation and Emotion, 28*, 147-169.
- Reis, H.T., Sheldon, K.M., Gable, S.L., Roscoe, J. & Ryan, R.M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin, 5*, 39-56.
- Resnick, M.D., Bearman, P.S., Blum, R.M., Bauman, K.E., Harris, K.M., Jones, J., Tabor, J., Beuhring, T., Sieving, R.E., Shew, M., Ireland, M., Bearinger, L.H. & Udry, J.R. (1997). Protecting adolescents from harm: Findings from the National Longitudinal

- Study of Adolescent Health. *The Journal of American Medical Association*, 278, 823-833.
- Robson, C. (1993). *Real world research*. Oxford: Blackwell.
- Roeser, R.W., Eccles, J.S. & Strobel, K. (1998b). Linking the study of schooling and mental health: Selected issues and empirical illustrations at the level of the individual. *Educational Psychologist*, 33, 153-176.
- Roeser, R.W. & Eccles, J.S. (2000). Schooling and mental health. In A.J. Sameroff, M. Lewis & S.M. Miller (Eds.), *Handbook of Developmental Psychopathology*. Second Edition. New York: Kluwer Academic/Plenum Publishers.
- Roeser, R.W., Eccles, J.S. & Sameroff, A.J. (2000). School as a context of early adolescents' academic and social-emotional development: A summary of Research findings. *The Elementary School Journal*, 100, 443- 471.
- Rutter, M. & Smith, D.J. (1995). *Psychosocial disorders in young people*. Cambridge: Cambridge University Press.
- Rutter, M., Giller, H. & Hagell, A. (1998). *Antisocial behaviour by young people*. Cambridge: Cambridge University Press.
- Rutter, M. & Maughan, B. (2002). School Effectiveness Findings 1979-2002. *Journal of School Psychology*, 4, 451-475.
- Rutter, M. & Silberg, J (2002). Gene-environment interplay in relation to emotional and behavioural disturbances. *Annual Review of Psychology*, 53, 463-490.
- Ryan, N.M. (1989). Stress-coping strategies identified from school age children's perspective. *Research in Nursing and Health*, 12, 111-122.
- Ryan, R.M., Stiller, J. & Lynch, J.H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *Journal of Early Adolescence*, 14, 226-249.



- Ryan, R.M. & Deci, E.L. (2000). Self- determination theory and the facilitation of intrinsic development, social development and well-being. *American Psychologist*, 55, 68-78.
- Ryan, R.M. & Patrick, H. (2001). The classroom social environment and changes in adolescents' motivation and engagement during middle school. *American Educational Research Journal*, 38, 28-38.
- Ryan, R.M. & Deci, E.L. (2002). An overview of Self-Determination Theory: An organismic Dialectical Perspective. In E.L. Deci & Ryan, R.M (Eds.), *Handbook of Self-Determination Research*. Rochester: University of Rochester Press.
- Sandler, I.N., Tein, J.Y. & West, S.G. (1994). Coping, stress, and the psychological symptoms of children of divorce: A cross-sectional and longitudinal study. *Child Development*, 65, 1744-1763.
- 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.
- Scarr, S. & Scarr S. (1992). Developmental theories for the 1990s: Development and individual differences. *Child Development*, 63, 1-19.
- Sears, S. J. & Milburn, J. (1991). School age stress. In L. E. Arnold (Ed.), *Childhood stress*. New York: Wiley.
- Seiffe-Krenke, I. (1995). *Stress, Coping, and Relationships in Adolescence*. New York: Erlbaum, Hillsdale.
- Seligman, M.E. P., Peterson, C., Kaslow, N.J., Tanenbaum, R.L., Alloy, L.B. & Abramson, L.Y. (1984). Attributional style and depressive symptoms among children. *Journal of Abnormal Psychology*, 93, 235-258.
- Seligman, M.P.E. (1975). *Helplessness. On depression, development and death*. San Fransico:

W.H. Freeman and Company

Seligman, M.E.P., Abramson, L.Y. & Teasdale, J.D. (1978). Learned helplessness in humans:

Critique and reformulation. *Journal of Abnormal Psychology*, 87, 49-74.

Sheldon, K.M., Reis, H.T. & Ryan, R.M. (1996). What makes for a good day? Competence and autonomy in the day and in the person. *Personality and Social Psychology Bulletin*, 22, 1270-1279.

Sheldon, K.M., Ryan, R.M., Rawsthorne, L. & Ilardi, B. (1997). Trait self and true self: Cross-role variation in the Big Five traits and its relations with authenticity and subjective well being. *Journal of Personality and Social Psychology*, 73, 1380-1393.

Sheridan, C.L. & Smith, L.K. (1987). Stress and academic achievement in teenagers: Assessment and intervention. *International Journal of Psychosomatics*, 43, 20-24.

Short, R. J. & Shapiro S. K. (1993). Conduct disorders: a framework for understanding and intervention in schools and communities. *School Psychology Review*, 22, 362-375.

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.

Skinner, E.A., Zimmer-Gembeck, M.J. & Connell, J.P. (1998). Individual differences and the development of perceived control. *Monographs of the Society for Research in Child Development*, 63, Serial No. 254.

Steinar, H., Erickson, S.J., Hernandez, N.L. & Pavelski, R. (2002). Coping styles as correlates of health in high school students. *Journal-of-Adolescent-Health*, 30, 326-335

Steinberg, L. (1990). Autonomy, conflict, and harmony in the family relationship. In S.S Feldman & G.R. Elliot (Eds.), *At the threshold: The developing adolescent* (pp 255-276). Cambridge, MA: Harvard University Press.

- Størksen, I., Røysamb, E., Moum, T. & Tambs, K. (in press). Adolescents with a childhood experience of parental divorce: a longitudinal study of mental health and adjustment. *Journal of Adolescence*.
- Sørli, A-M. (1998 b). *Mestring og tilkortkomning i skolen. Fokus på elevers skolefaglige kompetanse, sosiale kompetanse og selvoppfatning. Rapport 12*. Oslo: NOVA.
- [Coping and shortcoming in school. A focus on students' academic competence, social competence and self picture; in Norwegian].
- 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.
- Thuen, E., Bru, E. & Ogden, T. (in press). Students' perceptions of learning environment factors and their reports of emotional and behavioural problems. To what degree do students' coping styles influence this relationship? *Scandinavian Journal of Educational Research*.
- 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 Merriënboer, J.J.G., & Paas, F. (2003). Powerful Learning and the Many Faces of Instructional Design: Toward a Framework for the Design of Powerful Learning Environments. In E.D. Corte, L. Verschaffel, N. Entwistle & J. Van Merriënboer (Eds.), *Powerful Learning Environments: Unravelling Basic Components and Dimensions*. New York: Pergamon.
- 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*, 20, 3-26.
- Vygotsky, L.S. (1978). *Mind in Society. The Development of Higher Psychological Processes*. Cambridge: Harvard University Press.
- Wang, M.C. & Walberg, H.J. (1985). *Adapting instruction to individual differences*. Berkeley, CA: McCutchan.
- Wang, M.C. & Zollers, N.J. (1990). Adaptive instruction: An alternative service delivery approach. *Remedial and Special Education*, 11, 7-21.
- Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York: Springer-Verlag.
- Weiner, B. (1994). Integrating social and personal theories of achievement striving. *Review of Educational Research*, 64, 557-573.
- 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.
- Wellborn, J.G. (1991). *Engaged and disaffected action: The conceptualization and measurement of motivation in the academic domain*. Unpublished doctoral dissertation, University of Rochester, Rochester, NY.
- Wilkinson, R.B., Walford, W.A. & Espenes, G.A. (2000). : Coping styles and psychological health in adolescents and young adults: A comparison of moderator and main effects models. *Australian-Journal-of-Psychology*, 52, 155-162
- 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

**APPENDIX I.** Factor loadings, eigenvalues and variance explained for six factors derived from the factor analyses of items assessing students` perception of learning environment factors. The factor analyses implemented principal axis factoring extraction and varimax rotation.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
<b><i>Teachers` emotional support</i></b>						
I feel that teachers value me	0.78					
I feel that teachers have belief in me	0.76					
I feel that teachers care about me	0.75					
The teachers often praise me	0.69					
I feel that teachers disregard me	0.65					
The teachers are like my good friends	0.56					
The teachers will help me if I have problems	0.56					
The teachers consider my opinions or wishes	0.50					0.43
The teachers know what interest I have	0.47					
<b><i>Teachers` academic support</i></b>						
When we do group work, teachers explain well		0.73				
When we work on our own, teachers explain well		0.72				
The teachers are good at instructing the whole class		0.69				
When shifting activity, teachers explain well		0.69				
Teachers provide good support during schoolwork		0.65				

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
<b><i>Competition for grades</i></b>						
Students in this class compete about doing their schoolwork best			0.86			
Students in this class try hard to get better grades than their friends			0.86			
Students in this class don't feel they compete with each other			0.85			
There is much competition in this class			0.81			
<b><i>Teachers' monitoring</i></b>						
The teachers make sure that we do our best in class				0.74		
The teachers make sure that we behave well in class				0.74		
The teachers check to see that we do our homework properly				0.69		
The teachers make sure that we behave well during recess				0.62		
When students are disruptive, the teachers are able to handle this				0.53		
<b><i>Relationships between classmates</i></b>						
My classmates like to be with me					0.79	
Most students in my class are my good friends					0.78	
I like to be with my classmates					0.74	
My classmates help me					0.73	
<b><i>Student influence</i></b>						
I participate in decisions regarding choice of my work tasks						0.80
I participate in decisions regarding working methods I shall use						0.79

S

I feel that I can influence my working situation at school 0.56

It is useful to put forward proposals about how things should be in class 0.45

Eigenvalues	4.5	3.4	2.9	2.6	2.5	2.3
Variance explained						
Total: 56.8%	14.1%	10.5%	9.1%	8.2%	7.7%	7.1%

Note that negatively stated items were reversed before entering the factor analysis.

## **APPENDIX II:** Additional learning environment factors included in paper IV.

### ***Teacher guidance***

The teachers help me planning and organizing my schoolwork

The teachers help us to choose an appropriate method

The teachers often talks with the students about their work and progress

The teachers are good at motivating the students

### ***Adaptation of schoolwork***

The teachers are good at making use of students' interests and skills with regard to the schoolwork

I feel that I can make use of my strengths when doing my schoolwork

I feel that the teachers take my opinions and wishes into consideration

I feel that the school day varies in a good way