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## 7. HOW ARE SITUATIONAL ACADEMIC EMOTIONS RELATED TO TEACHER STUDENTS' GENERAL LEARNING PROFILES?

### INTRODUCTION

When students enter lecture halls and seminars, they enter with various dispositions and may entertain a range of beliefs. Such beliefs may also be socially shared by their discipline or academic community (Lonka & Lindblom-Ylänne 1996; Mäkinen, Olkinuora, & Lonka 2004). These dispositions may contribute to engaging or disengaging interaction with the academic environment in question. Contexts may vary in terms of how engaging and student-activating they are (Lonka & Ketonen 2012). The interaction between the student and the learning environment can lead to either *constructive* or *destructive friction*, depending on how students' individual study habits correspond to the demands of the learning environment (Vermunt & Verloop 1999). The learning environment and the instruction trigger either positive or negative situational emotions. Research on emotions has shown that students experience a rich variety of emotions in academic settings (Pekrun, Goetz, Titz, & Perry 2002).

The purpose of this chapter is to discuss the role of academic emotions in the process of studying and learning. We wanted to investigate how university students who varied in terms of their study profiles experience an interactive lecture, and specifically, what kinds of academic emotions they express. Our focus is on the relation between students' dispositions and their experience of a specific form of interaction, namely, an activating mass lecture.

Below, after the introduction, current theories and research on student learning, motivation, and academic emotions, as well as the aims of this study are presented. Then the methods and results of the empirical investigation are given. Finally, some proposals for future studies are discussed.

### LEARNING RESEARCH TRADITIONS IN HIGHER EDUCATION

There is a long history of research on student learning in higher education (Lonka, Olkinuora, & Mäkinen 2004). In previous research, a number of frameworks have been applied to the question of university study. Student Approaches to Learning (SAL) is probably the best-known. It differentiates between surface and deep

approaches and introduces as well a strategic approach (e.g., Biggs 1987; Entwistle & Ramsden 1983; Lonka & Lindblom-Ylänne 1996; Marton & Säljö 1976).

The other main tradition is Self-Regulated Learning (SRL) (e.g., Boekaerts 1997; Pintrich 2000; Vermunt 1998). Students may be able to regulate their own learning or rely on external regulation (e.g., by the teacher). Vermunt (1998) pointed out that in the most problematic cases, students lacked the readiness to regulate their own learning. Lonka & Lindblom-Ylänne (1996) showed that such regulatory problems were harmful, even among highly selected students in medicine and psychology.

A somewhat different tradition relies on Cognitive and Attributional Strategies (e.g., Cantor 1990; Eronen, Nurmi, & Salmela-Aro 1998; Jones & Berglas 1978; Martin, Marsh, & Debus 2001; Norem 1989; Nurmi, Aunola, Salmela-Aro, & Lindroos 2003). Some students will deliberately avoid challenging goals rather than make an effort to deal with the challenges. Such thinking strategies have been described in terms of task avoidance. On the other hand, some students use active, task-focused strategies, such as optimism, when faced with challenging goals. While task avoidance predicts low academic achievement and dissatisfaction, optimism predicts positive achievement and satisfaction (Nurmi et al. 2003).

Heikkilä and Lonka (2006) were the first to look at the relations among the three traditions and show that the surface approach to learning, a lack of regulation, and task avoidance were mutually related, and that deep approach, self-regulation, and optimism were also related to each other. Such dispositions are related not only to learning outcomes, but also to the general well-being of university students (Heikkilä, Lonka, Nieminen, & Niemivirta 2012): optimistic and self-regulated students did better than those who suffered regulatory problems and task avoidance.

Even in highly selected student populations, there are problematic approaches to studying. Universities may pose the danger of distress for the students (Robotham & Julian 2006). Students may feel stressed, anxious, or exhausted when the demands and study pace are felt to be too high (Lonka et al. 2008). In addition, lack of interest has to do with an individual's experience of how meaningful and important they consider their studies to be. Mäkinen et al. (2004) showed that lack of interest especially (i.e., cynicism and lack of meaning) was a significant risk for drop-outs in all faculties. *Dysfunctional orientation* was identified by Lonka et al. (2008), in which exhaustion, lack of regulation, lack of interest, and task avoidance were all related.

Linking approaches to learning, self-regulated learning, and cognitive and attributional strategies has been shown to be a fruitful way of examining teacher students' learning (Heikkilä et al. 2012). Research, however, indicates that *academic emotions* are significantly related to student motivation, learning strategies, cognitive processes, self-regulation, and academic achievement. Pekrun et al. (2002) defined academic emotion as an emotion experienced in academic settings and related to studying, learning, or instruction. Such emotions, for example, are the enjoyment of learning, pride in success, or test-related anxiety. In addition to the general profiles, we wanted to investigate the role of academic emotions in the study and learning

processes. Our previous research showed that situational academic emotions were related to learning outcomes in a student-activating lecture course (Ketonen & Lonka 2012; Lonka & Ketonen 2012). Interest and exhaustion were positively related, whereas anxiety was negatively related to the grade for the course.

The question remains: what is the interaction between general learning profiles and situational academic emotions? These subjects have been investigated separately, but to our knowledge not much is known about the relationships between general and situational aspects of studying and learning among university students. The only exception is Trigwell, Ellis, & Han's (2012) study in which a relationship was found between the ways first-year university students experienced their courses emotionally and the approach they took to learning. The students who experienced more positive emotions and fewer negative emotions were likely to adopt a deeper approach to learning. By contrast, students who described more of a surface approach to learning were more likely to report fewer positive emotions and more negative emotions (Trigwell et al. 2012).

We wanted to explore the relationships between general learning profiles and situational academic emotions in a student-activating lecture course. We examined the kinds of learning profiles that could be found to classify the participants according to the general levels of exhaustion, problems in regulation of learning, lack of interest, task avoidance, and optimism expressed, and we studied how these profiles differed in terms of situational academic emotions, the degree of challenge experienced in a task, a sense of competence, self-study time, and learning outcomes. We hypothesized that general learning profiles would predict the kinds of situational emotions that would be triggered in a lecture context.

## DATA AND METHODS

### *Participants*

The participants were 107 Finnish first-year elementary and kindergarten teacher students from the University of Helsinki. In Finland, the teaching profession is very popular, and many apply to study. Only about seven percent of applicants are accepted to the five-year Master of Education program for elementary school teachers. Even though it is somewhat easier to get into the three-year kindergarten teacher education program (a Bachelor of Education degree), it is reasonable to argue that the students who participated in the present study formed a highly select group.

In their first semester, the participants attended a student-activating introductory course in educational psychology (the context is described in more detail in Lonka & Ketonen 2012). Overall, 77% of those who attended filled in the questionnaire used in our study. The participants' ages ranged from 19 to 51 (mean 23.6, standard deviation 5.4). Women (85%) were overrepresented compared to men (15%), a difference that reflects the gender distribution in teacher education at the University of Helsinki.

### *Procedures*

The data were collected in December of 2009. The purpose of the study was explained to all participants. It was emphasized that participation was voluntary and that, at any time, the participants could decide not to complete the questionnaire. All participants signed an informed consent form, including consent to collect the course grades as part of the data. The participants filled in the questionnaire during the last lecture of the course, five days before the course examination. Of the 107 participants, 92 filled in the questionnaire and took the course examination. In the statistical analyses, the largest possible number of participants was included in each analysis.

### *Materials*

The self-reported questionnaire consisted of Likert-type questions to assess general factors in studying, such as emotional and motivational problems, along with cognitive and attributional strategies, as well as situational factors, including academic emotions, the challenge experienced, and the students' sense of competence. The last three, unlike the general factors, were each measured situationally in the context of the course.

General learning profiles were assessed using items based on the MED NORD instrument (Lonka et al. 2008), which is a collection of scales measuring a variety of aspects of student learning. The structural validity of the scales was tested by means of a series of factor analyses.

Three separate scales were used for assessing students' emotional and motivational study problems. For assessing exhaustion in relation to studying, a modified four-item version of the Maslach and Jackson (1981) Exhaustion Scale was adopted (e.g., "I feel totally exhausted"). Students' experienced lack of interest (e.g., "The contents of my studies do not motivate me") was assessed with two items from the Inventory of General Study Orientations (IGSO) (Mäkinen et al. 2004). Items concerning problems with regulation of learning were adopted from the Inventory of Learning Styles (Vermunt & Van Rijswijk 1988). Three items from the original five-item Lack of Regulation scale were used (e.g., "I notice that I have trouble processing a large amount of subject matter"). A Likert scale ranging from (1) totally disagree to (5) totally agree was used to rate each item.

A shortened version of the Strategy and Attribution Questionnaire (SAQ) (Nurmi, Salmela-Aro, & Haavisto 1995) was used to assess students' cognitive and attributional strategies. We used eight items from the inventory to reflect two types of strategies: optimism (e.g., "When I get ready to start a task, I am usually certain that I will succeed in it") and task avoidance (e.g., "What often occurs is that I find something else to do when I have a difficult task in front of me"). The Likert scale ranged from (1) totally disagree to (5) totally agree.

Based on the MED NORD instrument (Lonka et al. 2008), we constructed sum variables for each scale: (1) exhaustion, (2) lack of interest, (3) lack of self-regulation,

(4) optimism, and (5) task avoidance. Cronbach's alphas for each variable were .78, .76, .70, .77, .72, respectively.

Academic emotions were assessed using a modified PANAS scale (Watson, Clark, & Tellegen 1988; see also Litmanen, Lonka, Inkinen, Lipponen, & Hakkarainen 2012; Tolvanen et al. 2011), consisting of four positive affects (interest, enthusiasm, determination, energy) and four negative affects (exhaustion, anxiety, nervousness, irritation). The questionnaire also addressed two single-item measures relating to the challenge of the task ("How challenging is this course?") and a sense of competence ("How competent do you feel in this course?"). All items were answered using a Likert scale ranging from (1) not at all to (7) very much.

Stress was measured with a single-item measure of stress symptoms (Elo, Leppänen, & Jahkola 2003). This measure first gives a definition of stress followed by a question and a rating scale: "Stress means a situation in which a person feels tense, restless, nervous, or anxious, or is unable to sleep at night because his/her mind is troubled all the time. Do you feel this kind of stress these days?" The response was reported on a 5-point scale, varying from 1 (not at all) to 5 (very much). In addition, the participants were asked to evaluate how many hours they had spent on self-study by the time they filled in the questionnaire.

Learning outcomes were measured by using the grades obtained from the course from which the data were collected. The course exam was arranged five days after the last lecture and called for understanding and applying knowledge; thus, learning details by heart was not rewarded. The final grade was given on the European Credit Transfer and Accumulation System (ECTS) scale of 1 (no understanding) to 5 (deep understanding).

## RESULTS

### *Correlations*

Our first question concerned the relationships between emotional and motivational study problems and cognitive and attributional strategies (variables measuring general learning profiles). In order to explore these relations, bivariate correlations were computed (Table 1). Lack of regulation correlated positively with all the other study problems: exhaustion, lack of interest, and task avoidance, and negatively with optimism. In addition, there was a positive correlation between lack of interest and task avoidance.

### *General Learning Profiles*

In order to examine the kinds of learning profiles that could be found, we used a cluster analysis to classify the participants according to their responses to exhaustion, lack of regulation, lack of interest, task avoidance, and optimism. A hierarchical cluster analysis, selecting the squared Euclidean distance as a similarity measure,

Table 1. Pearson product-moment correlations between exhaustion, lack of regulation, lack of interest, task avoidance, and optimism.

	1	2	3	4
1 Exhaustion				
2 Lack of regulation	.514**			
3 Lack of interest	.209*	.319**		
4 Task avoidance	.152	.452**	.322**	
5 Optimism	-.219*	-.301**	-.180	-.054

\* $p < .05$ , \*\* $p < .01$

Table 2. Means, standard deviations, and ANOVA results for profile differences on exhaustion, lack of regulation, lack of interest, task avoidance, and optimism.

Variable	Dysfunctional <i>n</i> = 34		Committed <i>n</i> = 30		Unstressed <i>n</i> = 39		<i>F</i> (2,100)	<i>p</i>	$\eta_p^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Exhaustion	3.41 <sub>a</sub>	.61	3.20 <sub>a</sub>	.58	2.08	.55	21.04	.000	.53
Lack of regulation	3.93	.57	3.19	.68	2.53	.67	38.35	.000	.47
Lack of interest*	2.78	.88	1.32	.44	1.94	.73	19.21	.000	.40
Task avoidance	3.07	.57	2.16 <sub>a</sub>	.62	2.50 <sub>a</sub>	.56	48.10	.000	.29
Optimism	3.05	.61	3.43 <sub>a</sub>	.70	3.58 <sub>a</sub>	.51	22.48	.001	.13

Note. Means within a row sharing the same subscripts are not significantly different at the  $p < .05$  level. Owing to unequal variances, the Games-Howell correction instead of Bonferroni was applied to the variables with an \*.

was carried out in order to determine the number of clusters. Ward's method was used to form the initial clusters without restricting their number. On the basis of the dendrogram, a three-cluster solution was selected. After deciding on the number of clusters, we used a Quick Cluster Analysis with a K-means algorithm to form the final clusters.

The students were distributed among three profiles in the following manner: 33% of the students were in the first profile ( $n = 34$ ), 29% in the second ( $n = 30$ ), and 38% in the third ( $n = 39$ ). The profiles differed statistically significantly on all clustering variables, with effect sizes ( $\eta_p^2$ ) ranging from .13 to .53 (see Table 2). Pairwise comparisons, however, suggested variation in the patterns of differences across the profiles. All profiles differed significantly from each other in lack of regulation and lack of interest, while pairwise differences were detected in all the other variables. The three profiles were labelled according to the score means as (1) *dysfunctional*, (2) *committed*, and (3) *unstressed students*.

## TEACHER STUDENTS' LEARNING PROFILES AND ACADEMIC EMOTIONS

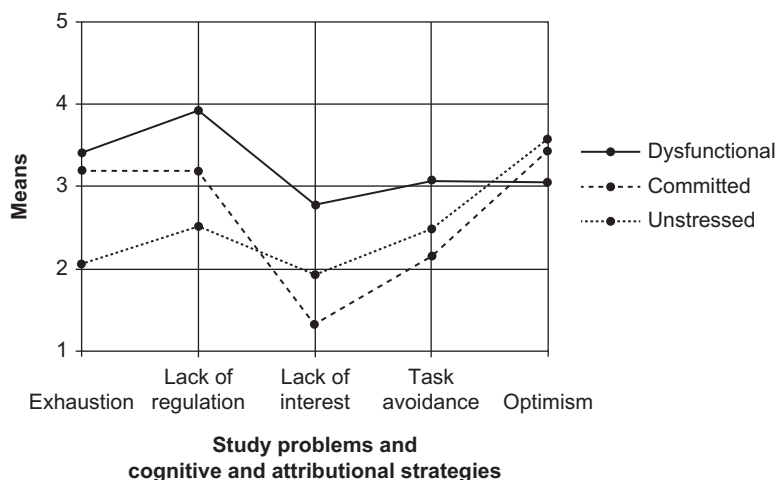


Figure 1. General learning profiles (mean scores of the groups).

*Dysfunctional students* made the highest scores on all the study problems and the lowest scores on optimism. *Committed students* scored lowest on lack of interest and task avoidance and average on optimism. Nevertheless, *committed students* expressed some exhaustion and lack of regulation. *Unstressed students* scored second highest on lack of interest and task avoidance, but still had the highest score on optimism and the lowest scores on exhaustion and lack of regulation. Figure 1, which shows the mean score profiles, illustrates the relative differences among the three learning profiles.

### *The Relation of General Learning Profiles to Situational Factors and Learning Outcomes*

Finally, two MANOVAs were conducted to examine between-group differences across the criterion variables of academic emotions, stress, the challenge experienced, sense of competence, self-study time, and learning outcomes (see Table 3 for a summary of the results). First, we examined group differences in relation to situational academic emotions and stress. The main effects were significant for all variables, with effect sizes ranging from .08 to .25. Pairwise comparisons revealed that *dysfunctional students* displayed lower levels of all the positive emotions than either the *committed* or the *unstressed students*, who, in turn, did not differ from each other on positive academic emotions. Similarly, *dysfunctional students* reported exhaustion and irritation significantly more than the other two groups. By contrast, *unstressed students* reported the lowest levels of anxiety, nervousness, and stress, lower than either *dysfunctional* or *committed students*, which interestingly did not differ from each other in terms of these emotions.

Table 3. Means, standard deviations, and MANOVA results on academic emotions, stress, experienced challenge, and sense of competence.

Variable	Dysfunctional n=34		Committed n=30		Unstressed n=39		F(2,97)	p	$\eta_p^2$
	M	SD	M	SD	M	SD			
Interest	4.85 <sub>a</sub>	1.30	5.68 <sub>b</sub>	1.09	5.33 <sub>ab</sub>	1.11	3.98	.022	.08
Enthusiasm	4.00	1.15	4.89 <sub>a</sub>	1.26	4.74 <sub>a</sub>	1.27	4.89	.009	.09
Determination	3.58	1.06	4.61 <sub>a</sub>	.96	4.41 <sub>a</sub>	1.25	7.76	.001	.14
Energy	2.79	1.02	3.96 <sub>a</sub>	1.20	3.85 <sub>a</sub>	1.20	10.40	.000	.18
Exhaustion	4.55	1.39	3.68 <sub>a</sub>	1.12	3.05 <sub>a</sub>	1.49	10.76	.000	.18
Anxiety	4.64 <sub>a</sub>	1.67	4.00 <sub>a</sub>	1.85	2.56	1.29	16.12	.000	.25
Nervousness	4.33 <sub>a</sub>	1.58	3.89 <sub>a</sub>	1.50	2.85	1.41	9.52	.000	.16
Irritation	3.55	1.62	2.39 <sub>a</sub>	1.20	2.28 <sub>a</sub>	1.23	7.27	.001	.13
Stress	3.70 <sub>a</sub>	.98	3.50 <sub>a</sub>	.88	2.62	1.09	11.96	.000	.20
Challenge	5.39 <sub>a</sub>	.86	5.29 <sub>a</sub>	1.05	4.85 <sub>a</sub>	1.07	3.05	.052	.06
Competence*	3.15	.91	3.96 <sub>a</sub>	.88	4.36 <sub>a</sub>	1.23	12.14	.000	.20

Note. Means within a row sharing the same subscripts are not significantly different at the  $p < .05$  level. Owing to unequal variances, the Games-Howell correction instead of Bonferroni was applied to the variables with an \*.

Next, we investigated whether there were differences between the groups in the situational sense of competence or the challenge experienced. The main effect was significant for a sense of competence, but not for the challenge experienced. As expected, both *committed students* and *unstressed students* scored higher on the sense of competence than *dysfunctional students*, but the two groups did not differ from each other. All three student groups experienced the course as highly challenging; *dysfunctional students* had the highest scores and *unstressed students* the lowest, but none of the pairwise differences showed statistical significance.

Our last aim was to examine whether there were differences between the profiles in self-study time or learning outcomes. The participants were asked to evaluate how many hours they had spent in self-study by the time they filled in the questionnaire. The main effect was significant for self-study time,  $F(2, 84) = 8.58$ ,  $p = .000$ ,  $\eta_p^2 = .17$ . Pairwise comparison with Bonferroni's correction revealed that *committed students* had spent more hours in self-study ( $M = 20.12$ ,  $SD = 15.09$ ) than either the *dysfunctional students* ( $M = 10.23$ ,  $SD = 8.49$ ) or the *unstressed students* ( $M = 9.55$ ,  $SD = 7.58$ ). The latter two groups did not differ from each other in terms of self-study time. Learning outcomes were assessed by means of the grade on the final examination in the course. Interestingly, the main effect was not significant for the course grade:  $F(2, 84) = 2.09$ ,  $p = 0.130$ ,  $\eta_p^2 = .05$ . Regarding



learning outcomes, *committed students* had the highest scores ( $M = 3.77$ ,  $SD = .65$ ) compared to *unstressed students* ( $M = 3.64$ ,  $SD = .78$ ) or *dysfunctional students* ( $M = 3.36$ ,  $SD = .83$ ), but none of the pairwise differences achieved statistical significance based on pairwise comparison using Bonferroni's correction.

## DISCUSSION

Our research showed that general study profiles were related to situational academic emotions, a sense of competence, and self-study time, but there appeared to be no direct association between general profiles and academic achievement in the specific course we examined. Unlike our results, a study by Heikkilä et al. (2012) showed that teacher students' general cognitive-motivational profiles were related to course grades. In our research, student profiles were based on emotional and motivational factors instead of on cognitive approaches, such as *deep understanding*, *critical evaluation*, and *surface approach* (Heikkilä et al. 2012), which could explain the missing interrelation. The general learning profiles found in our study would likely be related to students' grade point average (GPA) and accumulation of credits, which measure long-term performance instead of success in a specific course. In our previous research, however, situational academic emotions measured during this same student-activating lecture course were related to learning outcomes (Ketonen & Lonka 2012; Lonka & Ketonen 2012). Thus, the relationship between general learning profiles and learning outcomes may be mediated by situational academic emotions. This hypothesis will be tested in future research by path analysis using a larger sample size.

Since the first-year students were involved and the course content was demanding, it was not surprising that the experienced level of challenge was generally high. A strong sense of competence, however, was reported by *committed* and *unstressed students*, who also expressed positive academic emotions more often than the *dysfunctional students*. The weakest sense of competence was reported by the *dysfunctional students*, who also expressed the least positive emotions and more exhaustion and irritation. This supports the idea of constructive and destructive friction (Vermunt & Verloop 1999), whereby different groups of students reacted in various ways.

Interestingly, *committed students* also experienced some negative emotions: while *unstressed students* expressed the least anxiety, nervousness, and stress, *dysfunctional* and *committed students* did not differ from each other in terms of these emotions. It is possible that *committed students* experienced a constructive friction, forcing them to struggle somewhat at the upper limits of their competence. Such experience may eventually lead to a flow experience (Csíkszentmihályi 1990). Further, it seems that engaged and committed students may also feel concern about their performance, which is revealed, for example, in stress and nervousness, while unstressed or carefree students seem to be lacking in all negative emotions. One reason for rather high positive emotions and rather low anxiety, nervousness, and

stress could be that *unstressed students* had more knowledge of the course content to begin with. The highest competence and lowest challenge reported by *unstressed students* also speaks for this hypothesis. However, regardless of an otherwise rather good profile, *unstressed students* expressed a lack of interest more than *committed students*, an emotion that can be detrimental to motivation and even a reason for dropping out (Mäkinen et al. 2004). Thus, it would be interesting to follow these students to see which group succeeds best in the long run.

One limitation of the present research was that general study profiles and situational emotions were measured at the same point in time. In our later data collections, we corrected this and used a design that allowed us to measure general profiles before the course began. We also increased the number of participants by investigating students from other faculties and disciplines in addition to those in teacher education. In the future, we plan to report results from more and less student-activating courses and from students in different faculties in order to see how generalizable our results may be.

In the future, we will also look at the *expectancy value* (Eccles et al. 1983; Eccles 2005) before and after the lecture courses. It would be interesting to see how the expected value of the task, the general study profiles, and the situational emotions interact. It is important to look at what makes students invest their time in self-study and what factors predict university success. Such studies will provide valuable information about how to make mass lectures more engaging and productive learning experiences.

General study orientations seem to reflect a disposition that predicts the kinds of emotions that will be triggered during a course. That some students (even from a highly selective group) were not quite functional calls for further reflection: how can we better support their learning and study? Previous research indicates that well-being during the study years predicts future well-being at work (Salmela-Aro, Tolvanen, & Nurmi 2009). We want to promote meaningful learning and positive emotions in higher education, since we believe that these are the keys to our students' well-being and future success in life.

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