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ACHIEVEMENT EMOTIONS AND PERFORMANCE AMONG UNIVERSITY STUDENTS

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Abstract: *Emotions are a permanent accompaniment of learning, experienced before, during and after attending class, studying, or taking tests. The present study examined the relationships between learning-related emotions and school performance among university students. To collect data, the tools were AEQ (the scale concerning the learning-related emotions), a scale for learning challenges (extracted from MSQL), and a socio demographic questionnaire. The hierarchical regression indicated that school performance was explained by gender, residence, year of study, specialization, and four emotions: enjoyment, anxiety, boredom, hopelessness. The results can be used by teachers to manage and control their classroom behavior.*

Key words*: Achievement emotions, school performance, university students*

1. Introduction

Emotions have been conceptualized as a subjective state, accompanied by a physiological reaction and an evaluative response to some actions, situations, events (Baumeister & Bushman, 2007). A fundamental assertion of the major contemporary theories of emotion is the linkage between emotions and cognition (Barrett, 2009), emotions and physiological and motivational components (Scherer, 2000), with numerous applications in education or psychological interventions.

The emotions permanently accompany learning, influencing the attention focus, the processing, the storing and retrieving of information (Ashby, Isen, & Turken, 1999; Meinhardt & Pekrun, 2003), colouring in particular ways all situations: attending class, studying, writing tests and exams. As an expression of these connections, the umbrella concept of achievement emotions or academic emotions has been introduced (Pekrun, Goetz, Titz, & Perry, 2002).

Academic emotions are organized by Pekrun in a three-dimensional taxonomy, which combines the object of emotion, the emotion valence and the degree of activation. Emotions can be associated with the learning process or learning outcome, and can be positive (as joy, pride, hope, relief) or negative (as boredom, anger, anxiety), activating learning (as joy, pride, or anger) or deactivating learning (as relief or shame), facilitating or reducing academic performances (Tyson, Linnenbrink-Garcia & Hill, 2009; Pekrun,

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Elliot, & Maier, 2009). Although the learners experience a variety of emotions, anxiety has been, until the beginning of the current century, the most frequently researched emotion (over 1,200 articles dedicated to it) and the most frequently reported emotion in school, often related to success or failure (Linnenbrink-Garcia & Pekrun, 2011). The academic emotions experienced by pupils and students act before, during and after learning or testing situations (Pekrun et al. 2002).

Some studies show that joy, pride, hope (but not relief) predict higher performance and boredom predicts low performance, the effect of boredom being even bigger than the effect of anxiety (Pekrun et al., 2002; 2011; Daniels & Stupniski, 2009). Other studies mentioned that boredom influences negatively academic performance and can be an antecedent and a consequence of academic performance (Daniels & Stupnisky, 2010; Pekrun, Hall, Goetz, & Perry, 2014).

Positive emotions arise when there is a balance between challenges and students' skills, when the learning material is not perceived as being difficult. Negative emotions, such as boredom, occur when the challenges of the task seem light, and when they seem too high, anxiety appears (Gute & Gute, 2008). The above relationships do not always appear, the importance of the task being a possible moderator. Theses explanations are included in the control-value theory (Pekrun, 2006) associated with the challenge of task: when the required skills are higher than learner's skills, the learners will perceive the task as leading to a low controllability, and feel negative emotions.

A confounding factor for the impact of challenge-skills balance on learning emotions may also be the task value, which is determined by the individuals' perceptions of the usefulness of the task for them (Wigfield & Eccles, 2000). The perception of the learning task value can change the learners' emotions: if the learners perceive the task with a low value, unimportant, they may not feel anxiety, but they may feel boredom (Pintrich, Smith, García, & McKeachie, 1991; Wang & Wang, 2014) whereas the learners with greater task value beliefs have fewer negative emotions (Artino Jr, 2009).

The relations between emotions and academic outcomes may be weak because they can be moderated by the individual differences in effort control (Gumora & Arsenio, 2002; Valiente, Swanson, & Eisenberg, 2012). Probably, the effort control moderates the relations between emotions and academic competencies, especially for anxiety and anger. This moderation relation can explain the inconsistent findings of several researches.

In traditional classrooms, negative emotions, such as anxiety, were mentioned in relation to using foreign languages or taking exams, with reference to being in class or studying at home, accounting for 15% to 25% of all emotions (Pekrun et al.2002). Numerous papers have shown that anxiety is associated with poor performance, with avoidance behaviours or procrastination of school activities or their abandonment, with self-handicapping (Duchesne, Vitaro, Larose, & Tremblay, 2008). Both anxiety and anger are indirectly associated with outcomes because they can disrupt students' ability to recall the learning material (Linnenbrink, 2007). The positive emotion of enjoyment in learning is positively associated with self-efficacy, elaboration and metacognition, while boredom, frustration and confusion are indirectly associated with these. In adult learning, negative emotions could strengthen behavioural adaptations to cognitive conflict (Artino Jr, & Jones II, 2012; Daniles & Stupniski, 2012).

Research concerning the dynamics of affective states during complex learning confirmed the presence of confusion - engagement/flow, boredom-frustration, and confusion-frustration oscillations during deep learning activities (D'Mello & Graesser,

2012). Other studies show that negative emotions are the unique predictors of GPA in Mathematics and English (Gumora & Arsenio, 2002). Students' pride in their achievement in Mathematics or others subjects can predict performance in those subjects (Frenzel, Pekrun, & Goetz, 2007; Byrd & Chavous, 2009).

Gender, social climate and social feedback, and teachers' classroom management correlate with achievement emotions (Pekrun et al., 2002). In accordance with everyday beliefs, there is some evidence that in the domain of emotions, women may indeed be more emotionally responsive and display more emotions than men (Brody, 1997; Bradley et al., 2001). Some studies found that women and men did not differ on measures of emotional reactivity but in emotion regulation. The findings suggest that female feel more enjoyment and less class related anger, more learning-related anxiety and test anxiety and less test-related hope. There are no differences for any of the other emotions by comparing them to male students (Pekrun et al., 2011). Other research showed that when boys and girls received similar grades in Mathematics, boys reported higher enjoyment and pride than girls, but less anxiety, shame and hopelessness. In accordance with the control-value theory, these findings support the hypothesis that the female emotional pattern was due to the girls' low competence beliefs, combined with their high subjective value of achievement in Mathematics (Frenzel, Pekrun, & Goetz, 2007).

Concerning the place of residence, previous studies found differences between students who live inside a town and out of town. Anger, hope and anxiety are the emotions mostly felt by the students that live in rural areas, whereas the students that live inside a town feel fewer negative emotions, because they stay with their family and friends, which offer them comfort and support (Al-Qaisy, 2010; Eroğlu, Işiklar, & Bozgeyikli, 2006).

2. Objectives, Material and Methods

The current study will examine the relationships between learning-related emotions and academic performance in university students.

2.1. Hypotheses

With respect to previous studies, we predicted that: (1) all types of learning-related emotions will be reported by the participants; (2) there are significant differences concerning emotions depending on gender, specialisation, place of residence; (3) positive emotions are directly associated with academic performance and a favourable perception of task challenge, whereas negative emotions are indirectly associated; (4) academic performances can be explained by positive and negative emotions and individual characteristics. For achieving these objectives, a descriptive-correlational study was designed.

2.2. Participants

A convenience sample was used. The participants were 213 students, out of which 56.8% were female, with a mean age of 20.57 (*SD* = 2.6). Other characteristics were also taken into consideration, such as residence of the participants (urban – 71.9% or rural) and the field of studies (humanistic field - 50.7% or science field). The female students are more in the humanistic field and the male ones in the science field (χ^2 = 67.29,

$p < .001$). The GPA for entire sample is 7.4 ($SD = 1.2$), the students in humanistic having higher grades ($t = 9.07$, $p < .01$) but there are no significant differences concerning GPA depending on residence.

2.3. Tools

A part of the Academic Emotions Questionnaire – AEQ, the learning-related emotion, was used (Pekrun et al., 2005, 2011). For all scales, Cronbach Alpha values are high (Table 1). To measure reaction to learning-related challenges, in our investigation we aggregated four items (1, 6, 15, 16), extracted from MSQL (Pintrich et al., 1991). These items concern the perception of learning difficulties, engaging in overcoming the difficulties, the taste for challenge, the ability to meet challenges. For the *Perception of challenges* scale, the alpha Cronbach is .68 and the high scores show the acceptance of challenges. The participants responded by using 1 (strongly disagree) to 5 (strongly agree) for each item of the instruments.

The socio-demographic questionnaire gathered information regarding gender, age, specialisation and class, residence. The GPA was collected.

All questionnaires were administered during class time, after a short explanation of the aim and the structure of the instruments, and with the expressed consent of the students. The confidential character of the answers was assured by preservation of the participants' anonymity.

3. Results

Descriptive statistics show that the assessed emotions are reported by all participants. In our convenience sample, mean, standard deviation and alpha Cronbach are relatively equivalent to the values reported in the test manual (2011) (Table 1). For all scales, the distributions were relatively symmetrical for both positive and negative emotions.

Descriptive statistics for the entire sample compared to the AEQ manual Table 1

Categories of emotions	Learning-related emotion scales	In AEQ manual			In current research		
		α	M	SD	α	M	SD
Positive activating	1 Enjoyment (10 items)	.78	33.09	5.78	.80	36.24	7.17
	2 Hope (6 items)	.77	20.27	3.70	.78	22.87	4.81
	3 Pride (6 items)	.75	21.59	4.00	.77	23.21	4.56
Negative activating	4 Anger (9 items)	.86	22.00	7.04	.89	19.87	8.27
	5 Anxiety (11 items)	.84	30.69	7.76	.86	26.57	9.13
Negative deactivating	6 Shame (11 items)	.86	27.00	8.32	.88	26.07	9.46
	7 Hopelessness (11 items)	.90	23.06	8.09	.90	23.05	9.61
	8 Boredom (11 items)	.92	30.69	9.29	.90	27.23	10.01

Note: α - alpha Cronbach

Differences between groups are examined concerning the specialization, place of residence and gender criteria. The results show significant differences concerning all tree criteria, the most differences occurring for the criterion of specialization field. The means, standard deviations, statistical significance of differences and effect size (Faul, Erdfelder, Lang, & Buchner, 2007) are displayed in table 2.

Differences between various groups Table 2

Emotions	Specialization					Place of residence					Gender				
	S/H	M	SD	t/p	D Cohen	U/R	M	SD	t/p	D Cohen	M/F	M	SD	t	D Cohen
Enjoyment	S	33.4	7.1	6.19 .001	.85	U	36.1	7.5	.77/ .442	.11	M	34.5	6.83	3.18 .002	.45
	H	**39.1**	6.1			R	36.9	5.9			F	**37.6**	7.16		
Hope	S	21.3	4.5	4.8 .001	.67	U	22.9	5.9	.31/ .755	.04	M	22.1	4.51	.99 .319	.23
	H	**24.4**	4.7			R	23.2	5.0			F	23.2	5.04		
Pride	S	22.4	4.4	2.54 0.012	.35	U	23.0	4.8	1.27/ .23	.20	M	22.4	4.45	2,25 .026	.31
	H	**24.0**	4.6			R	23.9	3.7			F	**23.8**	4.57		
Anger	S	**21.9**	8.9	3.55 .001	.50	U	19.5	8.4	.48/6 3	.08	M	**21.2**	8.85	1.9 .059	.27
	H	17.9	7.1			R	20.1	7.5			F	18.9	7.71		
Hope-lessness	S	**24.5**	9.9	2.15 .033	.30	U	22.3	9.6	1.3/ .19	.20	M	23.8	9.29	.99 .326	.15
	H	21.7	9.1			R	24.2	9.1			F	22.5	9.85		
Shame	S	25.1	9.3	1.43 .154	.20	U	24.3	8.8	4.1/ .01	.63	M	25.3	8.99	-.99 .322	.14
	H	**27.0**	9.6			R	**30.2**	9.8			F	26.7	9.81		
Boredom	S	**28.7**	10.4	2.07/ .039	.29	U	26.3	10.1	1.85 .07	.28	M	28.4	10.01	1.45 .147	.21
	H	25.8	9.5			R	**28.9**	9.1			F	26.4	9.96		
Anxiety	S	**26.9**	9.8	.49/ .622	.07	U	25.5	9.4	2.56/ .01	.38	M	26.7	10.02	.13 .899	.01
	H	26.3	8.4			R	**28.9**	8			F	26.5	8.42		

Note: S – Sciences field, H-Humanist field; U - urban area, R - rural area; M – male, F – female.

In the investigated sample, academic emotions correlate with the participants' age and the perception of task challenge. Participants' age correlate directly with the hope of learning success and negatively with shame and anxiety. GPA, age and perception of challenges are associated directly with positive academic emotions and inversely with negative emotions (Table 3).

Table 3

Correlations between academic emotions, performance, age and task challenges

	3	Joy	Hope	Pride	Anger	Anxiety	Shame	Hopelessness	Boredom
1. GPA	-	.53**	.29**	.39**	-.28**	-	-	-.22*	-.27**
2. Age	.23**	-	.17*	-	-.19*	-.22**	-.19*	-.19*	-.22**
3. Perception of challenging	1	.42**	.49**	.26**	-.32**	-.36**	-.28**	-.39**	-.34**

*** Correlation is significant at the 0.01 level (2-tailed).*

** Correlation is significant at the 0.05 level (2-tailed).*

To explain the academic performance, a hierarchical regression has been conducted. We chose the type of regression to control the effect of gender, residence, year of study and specialization on performance. First, gender and residence were introduced ($R^2 = .09$, $F = 9.66$**), in the next block, the year of study and specialization were introduced ($R^2 = .32$, $F = 22.96$ **) and in the last block – the academic emotions (Table 4).

Hierarchical regression explaining GPA Table 4

Model		Coefficients			t	Sig.	Part Correlation
		B	Std. Error	Beta			
R^2 = .41, F = 16.59**							
	(Constant)	6.92	.33		18.45	.001	
	Gender	.06	.15	.03	.37	.71	.02
	Place of residence	-.21	.16	-.09	-1.32	.19	-.07
	Year of study	-.69	.22	-.29	-3.15	.002	-.19
	Specialisation	.43	.22	.19	1.96	.05	.20
	Enjoyment	.02	.01	.16	2.16	.03	.11
	Anxiety	.05	.01	.43	3.64	.05	.20
	Hopelessness	-.03	.01	-.25	-2.13	.03	-.12
	Boredom	-.02	.01	-.19	-2.03	.04	-.11

4. Discussion and Conclusions

The present research is focused on the learning-related achievement emotions in late adolescence and emerging adulthood, mostly investigated only in this century. The previous researches showed that the positive emotions are directly associated with academic performance, and the negative ones are indirectly associated with performance, with nuances for some emotions or learning situations.

Our findings support all four hypotheses. In line with the first hypothesis, all emotions have been reported by the participants in the university field, the mean and standard deviation being close to the values indicated in the AEQ manual.

In the investigated sample, the gender differences appear only for learning-related enjoyment, whereas the level of anxiety does not vary, as according to other research (i.e. Pekrun et al., 2011). Additionally, in the present research, pride is higher for female students, but the anger is higher for male. The effect size is medium for enjoyment and low for pride, anger and boredom. In other words, for female students, positive and activating emotions are higher and for male students, anger, a negative activating emotion is higher.

The comparisons using the criteria of the field of specialization and residence showed that the students enrolled in the field of sciences reported more negative learning-related emotions, while the students enrolled in the field of humanistic and social studies reported more positive emotions. A particular situation concerns shame, a negative emotion that appears more in the students in the humanistic field. We suppose that the topics covered in this field, more directed to human problems, can favour emotional communication between teachers and students. In the science field, probably, the pedagogical management is over-strict and, sometimes, ignores the students' sensibility. Additionally, shame, higher in our research in female students, is evaluated in other studies as women affect and as the sign of excessive field dependency (Wheeler, 1997). In this context, we underline that the female students are more numerous than the male ones in the social and humanistic field.

In our sample, students in the science field feel more boredom and anger, as impact of challenging tasks. According to the OCDE Study (2009), the two specialisations, humanistic and science, differ on the complexity of concepts and structure of practice: in

the humanistic field, teachers more frequently use enhanced activities, whereas in science filed, they use more structuring practices. Probably, in the social and humanistic field, students perceive the learning material as not being difficult and at the same time, the challenges do not seem light. In the science field, the required competences are higher than learner's skill, and, according to the control-value theory, the students perceive their controllability as leading to low performance and feel anger and frustration.

Negative emotions (shame, anxiety and boredom) are significantly more pronounced in the answers of the participants residing in rural areas. We hypothesized that the students with rural residence may feel isolation and are less socially active or are more stressed, by changing the relationships with their family and old friends. This uncomfortable situation can be associated with learning and generates negative emotions as shame, boredom or anxiety, confirming partially others studies that found significant differences concerning negative emotions. Simultaneous for these students, university can be a factor for vertical mobility, learning gaining a high value. There were no significant mean differences for any of the other emotions, depending on all three criteria.

In line with others research, positive emotions (enjoyment, pride and hope) are directly associated with school performance and the accepted challenge, and negative emotions are inversely associated with the same variables. Aged greater students report fewer negative emotions, more hope and a favourable reaction to challenging tasks. The findings concerning the linkage between academic performance and anxiety or shame are in line with the control value theory, supporting the hypotheses that negative activating emotions can exert variable effects on students' learning.

School performance can be explained by gender, confirming a vast literature, place of residence, year of study and specialization, which explain together 32% of the variance. When these first introduced variables are controlled, the four emotions explain supplementary 9% of the variance of GPA. So, anxiety explains 40% of the variance, followed by hopelessness (14%), enjoyment and boredom (10%) when their common influence is not considered. In our sample, the influence of anxiety is positive, it maintaining the divergence of findings and underlining the need for studying the effect of moderator variables between outcomes and emotions. According with previous research, boredom showed a negative effect on performance while controlling for students' gender, age and others variables.

The findings of this study must be used with caution: the students are enrolled only in the first and 2nd year of study and there is an imbalance concerning the residence of participants. A part of the findings can be explain by others variables that we have not analysed, such as students' goal types, mastery or performance goal orientation, effort control. The present study is among the few made in the Romanian context on addressing the issue of academic emotions, other than anxiety. Our results, mostly convergent with those obtained in previous research, can be a starting point for new and more complex investigations.

The consequences of this research in education regard teachers' classroom management and instructional behaviour. Obtaining a balance between task challenges and students' skills, paying more attention to boredom and improving positive and activating emotions may be other current goals for teachers.

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