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The Relationship between Achievement Emotions, Appraisals of Control and Value, and Academic Success

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Abstract

The aim of this research was to examine the relationship between appraisals of control and value with the positive and negative learning-related achievement emotions and academic success. The research was conducted with psychology and sociology students at the Catholic University of Croatia. The participants completed the Learning-Related Emotion Scales i.e. the Achievement Emotions Questionnaire, Task Value Scale and Control of Learning Beliefs Scale from the Motivated Strategies for Learning Questionnaire and few questions about sociodemographic data including their academic success.

The results showed that positive learning-related achievement emotions have a statistically significant positive correlation with academic success, while negative learning-achievement emotions have a statistically significant negative correlation with academic success. There was also correlation between other measured variables. The results were interpreted according to theoretical assumptions and practical implications of the importance of emotions in an academic setting were showed.

Key words: *academic success; learning-related achievement emotions; subjective control; subjective value; the control-value theory of achievement emotions.*

Introduction

Emotions are an integral and inseparable part of education, and there are at least two reasons for that. The first one is that learning and academic achievements are of great importance for the future of students, and therefore represent an important source of students' emotions (Burić, 2008). The second one is that academic context

represents grounds for experiencing a wide range of emotions influencing teaching, but also learning (Burić, 2008). Research (see Pekrun & Linnenbrink-Garcia, 2012) showed that emotions impact motivation (e.g., Meyer & Turner, 2002), the use of learning strategies, self-regulated learning and academic success (e.g., Pekrun, Goetz, Titz, & Perry, 2002). Additionally, students' emotional experiences directly affect their subjective well-being (Diener, 2000; Lucas & Diener, 2008). In previous research on emotions in education, the main emotion explored was test anxiety. However, since the 1990s, research started to explore other negative, but also positive emotions in education (Pekrun & Linnenbrink-Garcia, 2014).

Emotions in an academic setting are called achievement emotions, and are defined as emotions which are related to the achievement activities and the achievement outcomes (Pekrun, 2006). There are three important dimensions describing achievement emotions: valence (positive and negative achievement emotions), object focus (activity or outcome) and activity (activating and deactivating positive and negative achievement emotions). Additionally, we can differentiate emotions in terms of educational context in which they occur (class-, learning-, and test-related achievement emotions), and they can be conceptualized as state or trait emotions (Pekrun, 2006). This research has focused on positive (enjoyment, hope and pride) and negative (anger, anxiety, shame, hopelessness, and boredom) learning-related achievement emotions.

The control-value theory of achievement emotions represents an integrative framework for analyzing antecedents and effects of achievement emotions in an educational context (Pekrun, 2006). According to this theory, immediate antecedents of achievement emotions are cognitive appraisals of subjective control over achievement activities and their outcomes and subjective value of these activities and outcomes (Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011). Control appraisal refers to the perceived controllability over achievement activity or achievement outcome (e.g., belief that investing effort in learning will produce success), while subjective value refers to subjective evaluation of the importance of an achievement activity or achievement outcome (e.g., the importance of acquiring knowledge in a particular subject) (Pekrun, 2006). Generally, students are likely to experience positive emotions (e.g., enjoyment) if they perceive themselves to have high or partial control over achievement activity and are focused on achieving success and avoiding failure. On the other hand, if they do not perceive themselves as having control over achievement activity and expect failure, they are likely to experience negative emotions, such as anxiety (Pekrun, 2006; Pekrun, Frenzel, Goetz, & Perry, 2007).

These assumptions were tested in many earlier studies. When it comes to test-related achievement emotions, the results show that there is a relationship between higher level of positive test-related achievement emotions and higher level of control and value appraisals, and, on the other hand, the relationship between higher level of negative emotions and lower level of appraisals of control and value (e.g., Burić, 2015; Burić, Sorić, & Penezić, 2011; Frenzel, Pekrun, & Goetz, 2007; Peixoto, Sanches, Mata,

& Monteiro, 2016). The same results were found for positive and negative learning-related achievement emotions (Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010; Sorić, Penezić, & Burić, 2013).

The appraisals of control and value are found to be the major antecedents of achievement emotions, and studies show that achievement emotions experienced during lectures, studying and taking exams impact academic success (Pekrun et al., 2002). Results of previous research show that there is a relationship between positive achievement emotions and higher academic success, and a relationship between negative achievement emotions and lower academic success (e.g., Burić & Sorić, 2011; Burić & Sorić, 2012; Frenzel et al., 2007).

Considering the fact that earlier research conducted in Croatia primarily focused on measuring test-related achievement emotions, and less on learning-related achievement emotions, in this research we wanted to test whether control and value appraisals predict learning-related achievement emotions and whether positive and negative learning-related achievement emotions predict academic success. We expected that control and value appraisals would be statistically significant predictors of learning-related achievement emotions, in the way that higher perception of control and value appraisals will predict higher levels of positive learning-related achievement emotions. Lower perception of control and value appraisals would predict higher levels of negative learning-related achievement emotions. Besides, we expected that positive learning-related achievement emotions would be positive predictors of academic success, and negative learning-related achievement emotions would be negative predictors of academic success.

Methodology

Participants

The sample consisted of 164 undergraduate and graduate students (145 female students) of psychology and sociology at the Catholic University of Croatia, with an average age of 21.2 years (SD = 1.59). The largest number of participants were third year students (n = 52), followed by second-year students (n = 41) and finally, first-year students (n = 40) of the undergraduate study. The smallest number of students were in the first year of the graduate study (n = 31).

Measures

Learning-related achievement emotions were measured with The Achievement Emotions Questionnaire (AEQ; Pekrun, Goetz, & Perry, 2005). The back-translation method was used for the translation of the scales which measure positive and negative learning-related achievement emotions. Three positive learning-related achievement emotions were measured: enjoyment (e.g., "*I look forward to studying.*"; 10 items; α = 0.83), hope (e.g., "*I feel confident when studying.*"; 6 items; α = 0.81) and pride (e.g., "*When I excel at my work, I swell with pride.*"; 6 items; α = 0.75). Negative learning-

related achievement emotions were also measured: anger (e.g., "*I get angry when I have to study.*"; 6 items; α = 0.86), anxiety (e.g., "*When I look at the books I still have to read, I get anxious.*"; 11 items; α = 0.79), shame (e.g., "*I feel ashamed about my constant procrastination.*"; 11 items; α = 0.84), hopelessness (e.g., "*I feel hopeless when I think about studying.*" 11 items; α = 0.85) and boredom (e.g., "*Studying for my courses bores me.*"; 11 items; α = 0.89). By principal axis factor analysis, one factor was extracted in each of the eight scales measuring learning-related achievement emotions. Participants responded to each item by circling one of the choices on a five-point scale, with 1 being "Strongly disagree", and 5 being "Strongly agree". For each emotion, items are summed separately to derive a total score, and higher score indicates higher level of a particular emotion.

The Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991) was used for measuring control and value appraisals. Students' cognitive appraisals of control over activities and achievement were assessed with the Task Value Scale which consisted of six items measuring students' perception of interest, importance, and utility of the course material (e.g., "*I am very interested in the content area of this course.*"). Students provided their answers on a seven point-scale, with 1 being "Not at all true of me", and 7 being "Very true of me". One factor was extracted by principal axis factor analysis, and the internal consistency of the scale was high (Cronbach's α = 0.87). The total score is derived from adding the answers on all items and taking the average. Higher scores indicate higher perception of value of learning. Cognitive appraisal of control was assessed by the Control of Learning Beliefs Scale which measures students' beliefs that their efforts invested in learning will result in positive outcome (e.g., "*If I try hard enough, I will understand the course material.*"). The scale consisted of four items, where students had to circle one answer on the seven point-scale, ranging from 1 ("Not at all true of me"), to 7 ("Very true of me"). The principal axis factor analysis showed one factor. The internal consistency of the scale was relatively high (Cronbach's α = 0.78). The total score is computed by adding up answers on the four items and taking the average. Higher scores indicate a higher perception of control over learning.

Academic success was assessed based on grade point average, at the end of the previous semester. Students indicated their academic success by themselves.

Procedure

The study was conducted during regularly scheduled lectures in various courses at the Catholic University of Croatia. Students filled out questionnaires at the beginning of the lecture. All participants were provided with the same instructions, and were informed that the research is anonymous and voluntary.

Results

In order to analyze the relationships between all included variables, we used Pearson product-moment correlations between cognitive appraisals of control and value,

positive and negative learning-related achievement emotions and academic success. Additionally, we analyzed whether cognitive appraisals of control and value could predict learning-related achievement emotions and whether these emotions could predict students' academic success.

Table 1

Descriptive statistics for academic success, appraisals of value and control of learning, and learning-related achievement emotions

	M	SD	Min	Max
Academic success	3.94	.50	2.53	5.00
Value of learning	5.63	.95	2	7
Control of learning	5.96	.87	2	7
Learning-related achievement emotions				
Enjoyment	3.48	.59	1	5
Hope	3.66	.67	2	5
Pride	3.91	.62	2	5
Anger	2.30	.77	1	4
Anxiety	2.67	.65	1	5
Shame	2.15	.72	1	4
Hopelessness	1.91	.63	1	4
Boredom	2.85	.78	1	5

Descriptive statistics for all variables in the study are presented in Table 1. The average score for students' academic success is a grade B. Students have relatively high perceptions of the value of learning and control over learning. On average, the students agreed that they experienced positive learning-related achievement emotions, while for negative emotions, on average, they reported lower agreement. Generally, pride was the emotion with the highest average score, while hopelessness was the emotion with the lowest average score.

To test if data are normally distributed we used Kolmogorov-Smirnov test. The results showed that only learning-related enjoyment and boredom were normally distributed ($p>.05$), while all other variables have distributions which were not normally distributed. In our study, absolute values of skewness index for all variables were smaller than 1.5, and absolute values of kurtosis index smaller than 4. According to Kline (2005), variables with absolute values of skewness index above 3, and with kurtosis index above 10 are extremely deviant distributions. Since our results were not so extreme, we concluded that we could proceed with the parametric analyses.

Table 2 presents correlations between all variables. The academic success had a statistically significant positive correlation with the perceived value of learning, but not with the perceived control. A higher perception of value of learning was correlated with higher academic success. When it came to emotions, higher academic success had statistically significant correlations with all positive emotions. Among negative emotions, anger, anxiety, hopelessness and boredom had significantly negative

correlations with academic success. The relationship between shame and academic success was not significant. Overall, positive emotions were correlated with higher academic success, while negative emotions were correlated with lower academic success.

Table 2

Pearson's correlation coefficients for academic success, value and control of learning, and learning-related achievement emotions

	1	2	3	4	5	6	7	8	9	10	11
1. Academic success	-	.34**	.15	.38**	.37**	.47**	-.19*	-.21*	-.12	-.22**	-.29**
2. Value of learning		-	.41**	.56**	.39**	.48**	-.40**	-.18*	-.06	-.33**	-.51**
3. Control of learning			-	.10	.18*	.21**	-.15	.01	.02	-.19*	-.08
4. Enjoyment				-	.63**	.69**	-.44**	-.25**	-.04	-.28**	-.56**
5. Hope					-	.68**	-.57**	-.52**	-.24**	-.55**	-.52**
6. Pride						-	-.36**	-.27**	-.17*	-.44**	-.36**
7. Anger							-	.70**	.33**	.61**	.74**
8. Anxiety								-	.63**	.68**	.49**
9. Shame									-	.67**	.16*
10. Hopelessness										-	.51**
11. Boredom											-

Note: *$p < .05$; **$p < .01$

A higher perception of value of learning had a statistically significant correlation with the higher perception of all positive emotions, while higher perception of emotions of anger, anxiety, hopelessness and shame were correlated with lower perceptions of value of learning. Boredom and value of learning were not in a significant correlation. The perception of control over learning had a statistically significant positive correlation with hope and pride, and a statistically significant negative correlation only with hopelessness.

Table 3

Regression analyses with learning-related achievement emotions as outcome variables and value and control of learning as predictors

	Enjoyment		Hope		Pride		Anger		Anxiety		Shame		Hopelessness		Boredom	
	β	*t*	β	*t*	β	*t*	β	*t*	β	*t*	β	*t*	β	*t*	β	*t*
Value	.61	8.36**	.38	4.69**	.47	6.13**	-.40	-4.96**	-.23	-2.62*	-.06	-0.66	-.30	-3.66**	-.60	-8.14**
Control	-.16	-2.11*	.02	0.30	.04	0.52	.02	0.24	.11	1.25	.04	0.44	-.07	-0.81	.17	2.32*
R^2	.32		.15		.23		.16		.04		.00		.11		.30	
F	36.00		13.93		23.69		14.08		3.46		0.24		9.86		33.81	
p	.000		.000		.000		.000		.034		.788		.000		.000	

Note: *$p < .05$; **$p < .01$

Regarding correlation between all learning-related achievement emotions, positive emotions are in statistically significant positive intercorrelations, and have a statistically significant negative correlation with negative emotion, with the exception of correlation between enjoyment and shame, which is not statistically significant.

In order to answer the question whether appraisals of control and value of learning predict learning-related achievement emotions, we conducted regression analyses for each achievement emotion as an outcome variable and appraisals of value and control as predictors (Table 3). The results showed that perceived value of learning and control over learning accounted for statistically significant amount of variance of all positive learning-related achievement emotions, specifically enjoyment, hope and pride. On the other hand, among negative learning-related achievement emotions, the perceived value and control over learning accounted for statistically significant amount of variances of anger, anxiety, hopelessness and boredom, but not the emotion of shame. Therefore, the perception of value and control were both statistically significant predictors of the emotions of enjoyment and boredom. The perception of value, but not the perception of control of learning, was a statistically significant predictor of hope, pride, anger, anxiety and hopelessness.

Table 4

Regression analysis with academic success as outcome variable and learning-related achievement emotions as predictors

	Academic success		
	β	*t*	*p*
Enjoyment	.06	0.49	.626
Hope	.06	0.48	.631
Pride	.37	2.94	.004
Anger	.09	0.69	.492
Anxiety	-.07	-0.50	.619
Shame	-.07	-0.57	.568
Hopelessness	.08	0.61	.543
Boredom	-.16	-1.22	.225
R^2	.25		
F	5.76		
p	.000		

The regression analysis showed (Table 4) that positive and negative learning-related achievement emotions statistically significantly accounted for 25% of variance of academic success. From all eight emotions, only the emotion of pride was a statistically significant single predictor of academic success. A higher level of pride predicted higher academic success.

Discussion

The aim of this study was to explore whether the appraisals of value and control predict positive and negative learning-related achievement emotions and whether

those emotions predict academic success as assumed by the control-value theory of achievement emotions (Pekrun, 2006). The results show that perceptions of value and control over learning account for statistically significant variance of majority of positive and negative learning-related achievement emotions, as it is assumed by the control-value theory of achievement emotions. The only exception was the emotion of shame for which perceptions of value and control over learning were not statistically significant predictors.

A low perception of students' control during their studying, specifically students' belief that they were not able to put enough effort into studying, which then would not produce the desired outcome, and perception that studying of a certain course material is valuable, were significant predictors of learning-related enjoyment. On the other hand, a high perception of control over studying and a low perception of value of course material, predicted statistically significant learning-related boredom. The results for emotion of enjoyment were quite surprising. More precisely, the relationship between control over learning and enjoyment was not statistically significant, but when we included perception of control and value of learning in regression analysis, the perception of control became a statistically significant predictor of enjoyment. This indicated that perception of control could be a suppressor variable. Additionally, the perception of control was a negative predictor of enjoyment of learning, which was not in accordance with the earlier research and the assumptions of the theory (Pekrun et al., 2011; Sorić et al., 2013), which assumed that higher perception of control and value predicted higher enjoyment. The perception of value of learning, but not the perception of control over learning, was a significant positive predictor of hope and pride and a significant negative predictor of anger, anxiety and hopelessness. A possible reason for the perception of control as a non-significant predictor for the majority of achievement emotions, could be different measures used for the assessment of control. An indicator of control over learning used in this research, was the Control of Learning Beliefs Scale from Motivated Strategies for Learning Questionnaire which assesses students' beliefs that their efforts to study will lead to positive outcomes (Pintrich et al., 1991). Previous studies (Pekrun et al., 2011; Sorić et al., 2013), used the Perceived Academic Control Scale (Perry, Hladkyj, Pekrun, & Pelletier, 2001) and the Self-Efficacy for Learning and Performance

Scale from the Motivated Strategies for Learning Questionnaire (Pintrich et al., 1991) for the perception of control over learning. According to Burić (2015), the Perceived Academic Control Scale (Perry et al., 2001) is more useful in the prediction of the activity related emotions, which were assessed in this research. On the other hand, the Self-Efficacy for Learning and Performance Scale assesses two aspects of expectancy, one of which is expectancy for self-efficacy, which refers to the perception of the student that he is able to master a task and that he has skills to perform the task (Pintrich et al., 1991). The Control of Learning Beliefs Scale (Pintrich et al., 1991), which was used in this study, is possibly more focused on the outcomes, and not on the activity, which was our primary concern in this study. This could be the reason

why the perception of control was a non-significant predictor for the majority of learning-related achievement emotions.

The control-value theory of achievement emotions assumed that achievement emotions have an impact on different cognitive, motivational and regulating processes by mediating learning and achievement (Pekrun, 2006). The results showed that positive and negative learning-related achievement emotions statistically significantly predict academic success, which is in accordance with the earlier research (Burić, & Sorić, 2011, 2012; Frenzel et al., 2007). The only significant single predictor was learning-related pride. The higher estimate of pride which student experienced during studying predicted higher academic success. A moderate intercorrelation between all learning-related achievement emotions could be a reason for other emotions to be non-significant predictors. A high intercorrelation between predictors was generally considered a difficulty for assessing a significance of single predictors (Petz, Kolesarić, & Ivanec, 2012).

However, the study has some limitations. Firstly, it was conducted on a convenient sample of psychology and sociology students from one university. In further research, it would be preferable to include students from other faculties and universities in order for the results to represent a broader student population. Secondly, cognitive appraisals of control and value were conducted generally, for all courses which students attended. The earlier research and the control-value theory of achievement emotions assumed that cognitive appraisals of control and value are largely domain specific and therefore varied from one subject to another (Goetz, Pekrun, Hall, & Haag, 2006; Pekrun, 2006). The control and value appraisals occur during repeated exposure to a specific experience, and have an impact on the development of achievement emotions, and those experiences could vary from subject to subject. On the other hand, earlier studies were based on the implicit assumption that emotions were not domain specific (Zeidner, 1998, as cited in Goetz et al., 2006), although some studies analyzed students' emotions experienced in specific domain (Pekrun et al., 2002). A good example for that is test anxiety which was mostly measured related to a specific subject (Goetz, 2004; as cited in Goetz et al., 2006). For future research, it would be important to take into account domain specificity of appraisals of control and value in order to gain more precise insight into their impact on learning-related achievement emotions. Another important limitation is about causal relationship between learning-related achievement emotions and academic success, which could not be determined due to the fact that this was a cross-sectional study. According to the control-value theory (Pekrun, 2006), achievement emotions can influence academic success but vice versa is also possible, and a recent study confirmed this assumption (Pekrun, Lichtenfeld, Marsh, Murayama, & Goetz, 2017). In order to address this issue longitudinal studies are needed.

Conclusions

The research showed that appraisals of control and value significantly contribute to the explanation of the variance of learning-related achievement emotions and that

those emotions significantly contribute to the explanation of the variance of academic success, especially emotion of pride which is the only significant single predictor. This is important to keep in mind when working in education in order to help students develop control over their learning, particularly the perception of the value of learning material, which could help them induce more positive emotions, and set them on a path towards higher academic success.

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Odnos emocija postignuća, procjena kontrole i vrijednosti te akademskog uspjeha

Sažetak

Cilj je ovog istraživanja bio ispitati povezanost procjena kontrole i vrijednosti s pozitivnim i negativnim emocijama postignuća vezanim uz učenje i akademski uspjeh. Provedeno je jednokratno korelacijsko istraživanje sa studentima psihologije i sociologije na Hrvatskom katoličkom sveučilištu. Sudionici su ispunili Upitnik emocija postignuća, točnije Ljestvice emocija povezanih s učenjem, Ljestvicu vrijednosti zadatka i Ljestvicu vjerovanja o kontroli nad učenjem iz Upitnika motivacijskih strategija učenja, kao i upitnik općih podataka s dodatnim pitanjem o akademskom uspjehu.

Rezultati su pokazali kako su pozitivne emocije postignuća statistički značajno pozitivno povezane s akademskim uspjehom, a da su negativne emocije postignuća statistički značajno negativno povezane s akademskih uspjehom. Uz to je utvrđena povezanost između ostalih ispitivanih varijabli. Dobiveni rezultati interpretirani su u skladu s teorijskim postavkama i pokazuju praktične implikacije o važnosti emocija u obrazovnom kontekstu.

Ključne riječi: *akademski uspjeh; emocije postignuća povezane s učenjem; subjektivna kontrola, subjektivna vrijednost; teorija kontrole i vrijednosti emocija postignuća.*